The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 78, NO. 14 CHICAGO, ILLINOIS APRIL 8, 1922

TULAREMIA Francis 1921: A NEW DISEASE OF MAN*

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Tularemia is a specific infectious disease due to *Bacterium tularense*, and is transmitted from rodents to man by the bite of an infected blood-sucking insect [1] or by the handling and dissection of infected rodents by market men [2] or laboratory workers.[3]

As observed in Utah in the months of June, July and August, the disease is initiated by the bite of an insect, most probably the blood-sucking fly *Chrysops discalis*, which previously has bitten a jack rabbit infected with *Bacterium tularense*. Following the fly bite on some exposed surface of the body (neck, face, hands or legs), the onset occurs within forty-eight hours with fever and pain in the region of the lymph glands which drain the bitten area; the patient is prostrated and goes to bed; the lymph glands which drain the bitten area become tender, inflamed and swollen, and commonly suppurate, requiring incision. The fever is of a septic type, lasting from three to six weeks, and convalescence is slow.

Probably two dozen cases occurred in Millard County, Utah, in each of the years 1917, 1918, 1919 and 1920. The first case known to have terminated fatally was that which I [4] reported in 1919. The chief interest in tularemia as a disease of man arises from the disability which accompanies the illness. A disabling illness which overtakes the farmer in the busy season of midsummer, causing two or three months of sickness, is a matter which merits serious consideration.

Tularemia is a disease of the rural population, particularly attacking persons who work in the fields, men, women or children. Human cases occur in Utah during the seasonal prevalence of the fly (*Chrysops discalis*) in a community where jack rabbits are dying from an epizootic of a plaguelike disease of rodents, due to *Bacterium tularense*.[5] The reservoir of infection is in the sick and dying jack rabbits. The occurrence of human cases in nature in Utah has probably taken place every year for at least the last fifteen years. Two human cases have been reported from Cincinnati, probably contracted by handling infected rabbits. Six infections have recently occurred in men who handled or dissected infected guinea-pigs and rabbits in laboratory investigations of the disease.

Tularemia has been found in nature in the California ground squirrel *Citellus beecheyi*, the cotton tail rabbits of southern Indiana, the jack rabbits of Utah, and the ground squirrel *Citellus mollis* in Utah.

The proved presence of *Bacterium tularense* in the blood of rodents and in the blood of two human cases is so striking as to suggest the name tularemia for the disease. The bacteremic characteristic of the disease thus affords the necessary condition for ready transfer by blood-sucking insects. Already six insects have been proved by various workers of being capable of transmitting this infection.

INSECT TRANSMISSION

The rabbit louse *Haemodipsus ventricosus* is found on jack rabbits in Utah and is capable of transmitting the infection from tame rabbit to tame rabbit in the laboratory; [6] this warrants the conclusion that lice transfer the infection throughout the year and perennially from jack rabbit to jack rabbit in Utah.

The blood-sucking fly *Chrysops discalis* commonly found on horses in Utah is capable of transmitting the infection from tame rabbit to tame rabbit in the laboratory,[7] and this fly bites man; presumably it bites jack rabbits, and especially those which are sick or dying from tularemia and thus oblivious to biting flies.

The bedbug *Cimex lectularius*, which commonly infests beds and bites human beings and rodents, is capable of transmitting tularemia from white mice to white mice.[8]

Bacterium tularense suffered no apparent diminution of virulence by reason of long residence in bedbugs. This virulence was manifested by acute death from tularemia within seven, five, five and six days, respectively, in cases of (1) a mouse that was bitten by bugs infected seventy-one days previously; (2) a mouse that

*The name tularemia is based on the name of the causative organism, Bacterium tularense, plus *aima*, blood, and has reference to the presence of this bacterium in the blood, on the analogy of leukemia or bacteremia.

1. Francis, Edward: The Occurrence of Tularaemia in Nature as a Disease of Man, Pub. Health Rep. **36**: 1731-1738 (July 29) 1921.

2. Wherry, W. B., and Lamb, B. H.: Infection of Man with Bacterium Tularense, J. Infect. Dis. **15**: 331-340, 1914. Vail, D. T.: Bacillus Tularense Infection of the Eye, Ophth. Rec. **23**: 487, 1914. Sattler, Robert: Bacillus Tularense Conjunctivitis, Arch. Ophth. **44**: 265, 1915. Wherry, W. B.: A New Bacterial Disease of Rodents Transmissible to Man, Pub. Health Rep. **29**: 3387-3390, 1914.

3. Lake, G. C., and Francis, Edward: Six Cases of Tularaemia Occurring in Laboratory Workers, Pub. Health Rep. **37**: 392-413 (Feb. 22) 1922.

4. Francis, Edward: Deer-Fly Fever: A Disease of Man of Hitherto Unknown Etiology, Pub. Health Rep. **34**: 2061-2062 (Sept. 12) 1919.

5. McCoy, G. W.: A Plague-Like Disease of Rodents, Pub. Health Bull. 43, April, 1911. McCoy, G. W., and Chapin, C. W.: Bacterium Tularense the Cause of a Plague-Like Disease of Rodents, Pub. Health Bull. 53, January, 1912; Further Observations on a Plague-Like Disease of Rodents, with a Preliminary Note on the Causative Agent, Bacterium Tularense, J. Infect. Dis. **10**: 61-72, 1912.

6. Francis, Edward, and Lake, G. C.: Experimental Transmission of Tularaemia in Rabbits by the Rabbit Louse, Haemodipsus Ventricosus, Pub. Health Rep. **36**: 1747-1751 (July 29) 1921.

7. Francis, Edward, and Mayne, Bruce: Experimental Transmission of Tularaemia by Flies of the Species Chrysops Discalis, Pub. Health Rep. **36**: 1738-1740, 1921.

8. Francis, Edward, and Lake, G. C.: Transmission of Tularaemia by the Bedbug Cimex Lectularius, Pub. Health Rep. **37**: 83-95, 1922.

ate a bug infected 165 days previously; (3) a guinea-pig that was injected with fresh feces of bugs infected 167 days previously, and (4) a guinea-pig injected with bug feces that had been deposited seventy-six days after the date of infection of the bugs and which had subsequently dried on filter paper at an average room temperature of 20 C. for twenty-six days.

The mouse louse *Polyplax serratus*, commonly found on white mice, is capable of transmitting the infection among white mice.[9] Transmission was effected in twelve out of seventeen attempts by the transfer of lice from the hair of mice dead of tularemia to the hair of healthy mice. When inoculated mice were dropped into a jar in contact with lousy, healthy mice, the infection killed off all the healthy mice in twenty-five days.

The squirrel flea *Ceratophyllus acutus* was successful in one experiment in transmitting the infection from ground squirrel to ground squirrel in California.[9]

The stable fly *Stomoxys calcitrans* transmitted the infection from guinea-pig to guinea-pig when the interval between biting the infected and healthy animals was less than one hour.[10]

The squirrel flea, the stable fly, the bedbug and the fly *Chrysops discalis* bite both rodents and man; the rabbit louse and the mouse louse probably do not bite man.

THE CAUSATIVE ORGANISM

The causative organism of tularemia is *Bacterium tularense*, discovered and named in 1912 by McCoy and Chapin [5] of the Public Health Service, and identified by these authors as the cause of a plaguelike disease of rodents. The latter disease had been discovered in the California ground squirrels in 1911 by McCoy,[5] and was fully described by him at that time. *Bacterium tularense* was first cultivated by McCoy and Chapin on a special egg yolk medium, and until the present time this organism has been grown only on a medium containing hen's egg yolk.

Recently I [11] have succeeded not only in cultivating the organism on egg-free mediums, but also in isolating the organism from original sources on (1) serum glucose agar; (2) glucose blood agar; (3) blood agar, and (4) each of the foregoing mediums plus a piece of fresh sterile rabbit spleen. By far the best of these egg-free mediums is glucose blood agar plus a piece of fresh sterile rabbit spleen.

The strains used for this cultural work were three human strains from Utah and one ground squirrel strain from California, all obtained in 1920.

SEVEN CASES OF TULAREMIA IN MILLARD COUNTY, UTAH

A brief summary is given herewith of seven cases of tularemia which I investigated clinically and culturally in Millard County, Utah, one in 1919 and six in 1920. The diagnosis in each case was confirmed by cultures of *Bacterium tularense* obtained from guinea-pigs which had been inoculated either with blood of the patient (two cases) or with pus from the patient's suppurating lymph glands (five cases). Five of the patients were adult male farmers; one was a farmer's wife who worked in the field, and one was a girl, aged 7 years, who was a village resident. The onsets of the seven cases were between June 16 and August 26. Each presented an insect bite and resultant suppurating lymph glands. The glandular involvement was unilateral in each case, and confined to the lymph glands which immediately drained the bitten area.

SEVEN CASES OF TULAREMIA IN MILLARD COUNTY, UTAH

Case	Site of Insect Bite	Site of Suppurating Lymph Glands
1. W. E. C.	In hair of left temple	In front of left ear; behind left ear; at angle of jaw
2. J. T. G.	In hair of right temple	Behind right ear; at angle of jaw
3. M. S., and 4. C. F.	Posterior surface of right ear	Right posterior auricular area
5. R. S., and 6. McK.	In hair of neck posteriorly: right side	Right posterior auricular area
7. J.	Posterior surface, lower third of right thigh	Right inguinal region

The site of the insect bite may not attract the patient's attention during the first three days as much as the adjacent lymph glands do. The latter give rise to pain and tenderness; and, while treating the glands, the physician or the patient's wife may be the first to discover the bite. In two of our seven cases the bite was in the hair of the temple; in two, it was in the short hair of the neck posteriorly; in two it was on the posterior surface of the ear, and in one it was on that bare space above the stocking so commonly seen when a small girl bends forward.

After the third day the site of the bite begins to present a black necrosing center which soon suppurates and sloughs out, leaving a punched-out ulcer about three-eighths inch (1 cm.) in diameter which is followed by a permanent scar. The adjacent lymph glands in all of our seven cases required incision for the liberation of pus. On a visit to the infected district, one may see the unmistakable scars of a previous year's attack marking both the site of the insect bite and the once suppurating glands.

No systematic records of symptoms, temperature, pulse, blood cell counts or urinalysis were obtained in our cases. The investigation dealt mainly with the etiology, the source of infection, and its manner of spread.

One patient was confined to bed throughout his illness, which terminated fatally on the twenty-sixth day with symptoms of pneumonia at the right apex. Two patients spent the first month in bed, the second month about the house, and the third month doing light work. The other four cases were less severe, each of the patients losing about a month's work.

The fever is characterized by daily remissions. The temperature curve seems to resemble that of a septic condition. In Case 5, which proved fatal, the average of nine morning temperatures was 99.3 and the average of ten afternoon temperatures was 100.4, the highest being 101.6.

Some patients do not call a physician, or they may visit his office in the subacute stage to have an abscess opened at the site of a tardily suppurating gland; patients in this condition may be walking around with a temperature of 102.

While the symptoms and signs of this disease are chiefly local, the systemic effect is pronounced, as evi-

9. Francis, Edward, and Lake, G. C.: Transmission of Tularaemia by the Mouse Louse Polyplax Serratus, Pub. Health Rep. 37: 95-101, 1922.

10. Wayson, N. E.: Plague and Plague-Like Disease: A Report on Their Transmission by Stomoxys Calcitrans and Musca Domestica, Pub. Health Rep. 29: 3390-3393, 1914.

11. Francis, Edward: Cultivation of Bacterium Tularense on Mediums New to This Organism, Pub. Health Rep. 37: 102-115 (Jan. 20) 1922.

denced by the fever, the finding of the organism in the circulating blood (in two cases), the prostration during the acute stage, and the weakness during the period of slow convalescence. The majority of these patients do not recover their normal tone until about two or three months after the date of onset of the disease.

TWO FOCI OF INFECTION IN UTAH

So far as known, there have been but two foci of infection in Utah. The focus here reported is in Millard County, 5 miles (8 kilometers) west of Holden, 5 miles northwest of Fillmore, 25 miles (40 kilometers) southeast of Delta, and 120 miles (193 kilometers) south of Salt Lake City. The other focus has received clinical confirmation and is located near Brigham, a town 20 miles (32 kilometers) north of Ogden in Boxelder County. Both foci have probably existed for at least fifteen years.

THE FIRST REPORTED CASES OF TULAREMIA

What I believe to be the first clinical reference to human cases of this infection is contained in a paper read before the Utah State Medical Association, Salt Lake City, Oct. 3-4, 1910, by Dr. R. A. Pearse [12] of Brigham City, Utah. Dr. Pearse wrote, in 1910:

> I will give you the histories of a few cases of an infection probably caused by the bite of the large black and yellow horsefly, all cases of which, so far as I know, have been distributed over a definite area about Brigham City. This disease made its appearance in August, 1908, and August, 1910. The point of infection in all of my cases has been on an exposed portion of the body. All of the cases give the history of having been bitten by the large horsefly. Most of the patients say they had been bitten by the same kind of flies many times before during that season. The incubation period varies from two to five days. In all the cases there has been marked swelling of the glands and lymphatics about the area of the bite. In about one half of the cases some of the glands have gone on to suppuration. Most of the patients have had severe chills, sometimes during the incubation period, others having chilly sensations. The temperatures have run from 98 to 104 degrees. The duration of the disease has been from one to four weeks, the severity of the disease varying from slight malaise to death. All of the bites have gone on from a red infiltration like a mosquito bite to complete breaking down of the tissues and sloughing, forming a punched-out circular ulcer about one-fourth inch (6 mm.) in diameter and one-eighth inch (3 mm.) in depth.

Dr. Pearse refers briefly to six cases, three of which he saw in August, 1908, and three in August, 1910. The site of the bites in these cases were: in front of the right ear; the back of the neck; the right cheek; the left wrist; the ankle, and the back of the right hand.

Dr. Pearse also states that he saw several cases belonging to other physicians in his locality.

The first reference to a laboratory case of this infection was probably made by McCoy and Chapin,[13] who discovered *B. tularense* in 1912 as the cause of a plague-like disease of rodents in the California ground squirrels. They reported at that time complement fixation and agglutination to *Bacterium tularense* antigens, not only in the case of serums of naturally or artificially immune animals, but also in the case of two out of eleven human serums tested. The two positive human serums were from Dr. C. W. Chapin and a laboratory attendant, both of whom were extensively engaged in handling or dissecting infected rodents in the laboratory.

Dr. Chapin now states that, shortly previous to testing his own serum in 1912, he had had a febrile attack which kept him off duty for about three weeks, and which was unaccompanied by glandular enlargement or other local lesion. No absence from duty on the part of the laboratory attendant can now be recalled by Dr. Chapin.

In the light of present knowledge, it seems certain that what to McCoy and Chapin was a puzzling circumstance (the presence of antitularense amboceptors in the serums of two laboratory workers) was the proof of two unrecognized human cases of tularemia.

The first human cases to receive bacteriologic confirmation were two that occurred in 1913 and 1914 in the ophthalmic practices of Drs. Vail [2] and Sattler [2] at Cincinnati. *Bacterium tularense* was isolated in cultures by Drs. Wherry and Lamb [2] from guinea-pigs inoculated with conjunctival secretions and scrapings from conjunctival ulcers of these cases. The cases presented a unilateral severe ulcerative conjunctivitis and consequent glandular enlargements in the preauricular, cervical and submaxillary areas of the corresponding side; there was also marked constitutional disturbance, accompanied by pain, fever, marked prostration, sweats and chills, and ending in slow recovery after an illness of five to eight weeks' duration. How the ocular infection occurred is unknown. One patient was a meat cutter in a cheap restaurant; presumably he handled infected rabbits. The other was the wife of a farmer living in southern Indiana, on the M. farm. On a farm 4 miles (6.4 kilometers) from the M. farm, two rabbits were found dead and proved by Wherry [2] by guinea-pig inoculation and cultures to be infected with *Bacterium tularense;* the patient had prepared rabbit meat for the table.

SIX CASES OF TULAREMIA OCCURRING IN LABORATORY WORKERS

Six cases of tularemia occurring in laboratory workers have recently been reported by Lake and Francis.[3] All of the men, six in number, who have been intimately connected during the last two years with the laboratory investigations of tularemia which the Public Health Service has been conducting have contracted this disease. Such a record of morbidity among investigators of a disease is probably unique in the history of experimental medicine. Fortunately, there were no fatalities. Two of the men contracted the disease in the field laboratory in Utah, where they were compelled to work under primitive conditions; the other four contracted the infection in the Hygienic Laboratory at Washington, D. C. Two of the men were physicians, with years of experience in working with infectious diseases and materials; one was a highly trained scientist, and the other three investigators were experienced laboratory assistants.

In the laboratory cases, all the patients had a sudden onset of illness with high fever which, after remitting about the third day almost to normal, immediately became high again and then fell gradually to normal at the end of about three weeks. A lack of other significant constitutional disturbances or physical signs was noted. A slow convalesence extended over about two months, and recovery took place without complications.

12. Pearse, R. A.: Insect Bites, Northwest Med., March, 1911.
13. McCoy, G. W., and Chapin, C. W.: Bacterium Tularense the Cause of a Plague-Like Disease of Rodents, Pub. Health Bull. 53, January, 1912, p. 21.

The six laboratory cases (except the second [14] attack in Case 1) furnished no local lesions indicating the portal of entry of the infection, and no involvement of superficial lymph glands. This is in contrast to the human cases of tularemia in which the infection was contracted in nature in Utah; in all the latter there was a pronounced site of infection (insect bite) and a consequent pronounced lymphadenitis of the adjacent glands.

Complement fixation and agglutination tests, using antigens composed of *Bacterium tularense*, were made on the serums of the six laboratory cases on several occasions, from January, 1921, to October, 1921, and all were positive. The shortest interval after the onset of the disease before the serum was tested was thirteen days; the longest interval from the date of illness was more than two years.

The diagnosis of tularemia in these six cases rests (1) on the occurrence of a febrile attack lasting about three weeks in persons engaged in handling or dissecting rodents infected with the Utah strains of *Bacterium tularense;* (2) positive serum reactions for complement fixation and agglutination properly controlled, and (3) the absence of febrile attacks and positive serum reactions in about 100 other persons in the laboratory coming in casual contact with the infected rodents.

UNRECOGNIZED CASES

Known foci of this infection in rodents have been reported from California, Utah and Indiana. The known insects capable of transmitting the infection in animals are two species of biting flies, one species of fleas, two species of lice, and the common bedbug. There are probably other foci and other transmitting insects in the United States.

Unrecognized cases of tularemia probably occur in the known foci of infection in the United States, some of which may have febrile attacks without local lesions, while some may have local lesions and a secondary regional lymphadenitis without very notable constitutional disturbance.

Routine serologic tests for agglutination especially and for complement fixation, using antigens composed of *Bacterium tularense*, would probably not only detect cases in known foci of infection but also bring to light unknown foci. Positive serologic reactions are known to persist for two years after such an attack. Such tests might throw light on the etiology of some fevers of undetermined origin.

SUSPECTED CASES

In diagnosing suspected cases presenting an evident local site of infection and a secondary lymphadenitis involving the glands that drain the local lesion, the best procedure is to inoculate guinea-pigs or rabbits subcutaneously on the abdomen with material from the local lesion or glands or both; such material should first be rubbed in a mortar, suspended in saline solution, and strained through coarse gauze. Within a week the animals should die presenting a gray, granular caseation of the enlarged lymph glands of the groin, and great numbers of small foci of necrosis studded over the enlarged spleen especially and over the liver.

Material from the dead animal's glands, spleen and liver, when rubbed on the shaven, abraded skin of another guinea-pig or rabbit, should likewise cause its death within a week with the same typical lesions of the lymph glands, spleen and liver, and thus the infection may be propagated for an indefinite number of passages through guinea-pigs or rabbits. Cultures of *Bacterium tularense* may be obtained by inoculation from the spleen or liver of these animals to special mediums. The bacteriologic diagnosis of tularemia should not be expected from cultural inoculations or smears made direct from the patient.

CONCLUSION

Our experience should serve as a warning against unwarranted indifference to an infection which has claimed all of those who have continuously worked with it in the laboratory.

The ready susceptibility of man to this infection in nature and in the laboratory, its wide prevalence in nature in a number of rodents, and the growing number of blood-sucking insects found capable of conveying the infection should combine to put the medical profession of the United States on the watch for cases of this new disease of man.

NOTE.—Seven articles on tularemia referred to in this paper are being combined and reprinted from *Public Health Reports* in pamphlet form by the Public Health Service as Hygienic Laboratory Bulletin 130.

14. A second attack has recently occurred in Case 1 of this series, two years and five months after the first attack, and at a time when the patient was making daily dissections of infected animals. The second attack was associated with evident cracks on the fingers, on one of which there was engrafted an inflammatory papule which was soon followed by enlarged, painful and tender lymph glands in the epitrochlear and axillary regions of the corresponding side, but without fever or other constitutional disturbance. Bacterium tularense was isolated from the papule by guinea-pig inoculation.

TULAREMIA Francis 1921 DEVELOPING IN A LABORATORY WORKER

REPORT OF CASE *

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During the routine examination of ground squirrels in California for plague, McCoy,[1] in 1911, encountered an infection which produced pathologic changes in guinea-pigs that were almost indistinguishable from those due to infection with *Bacillus pestis*, and it was due to the inability to cultivate any organisms on agar medium from animals dead of this disease that led to the suspicion that the infection was not that of plague.

Observations made at this time showed that the disease was readily transmitted to guinea-pigs, mice, rabbits, monkeys and gophers. Rats were moderately susceptible, and cats, dogs and pigeons appeared to be immune. The disease was transmitted artificially by subcutaneous, cutaneous (vaccination), nasal and intraperitoneal inoculation.

In 1912, McCoy and Chapin [2] succeeded in isolating the specific organism of this disease, to which the name *Bacterium tularense* was given. It is a very small, rod-shaped organism, appears to be encapsulated, and is found in enormous numbers in the spleen of animals dead of this disease. The liver, bubo and heart's blood

* The name tularemia is based on the specific name Bacterium tularense, plus æmia, from the Greek and has reference to the presence of this bacterium in the blood, on the analogy of leukemia or bacteremia. The names thus far used for this disease are strictly vernacular and do not lend themselves to international usage as easily as a name in Latin form. Accordingly, the name tularemia is proposed, by Francis, as a technical international name.

1. McCoy, G. W.: A Plague-Like Disease of Rodents, Pub. Health Bull. 43, April, 1911.

2. McCoy, G. W., and Chapin, C. W.: Further Observations on a Plague-Like Disease of Rodents with a Preliminary Note on the Causative Agent, Bacterium Tularense, J. Infect. Dis. 10: 61-72 (Jan.) 1912.

usually contain the organisms, but in smaller numbers than the spleen. It is also found in the leukocytes as well as lying free. The organism is gram-negative, nonmotile, and stains very well with anilin gentian violet, carbolthionin and carbolfuchsin. Loeffler's methylene blue gives unsatisfactory results.

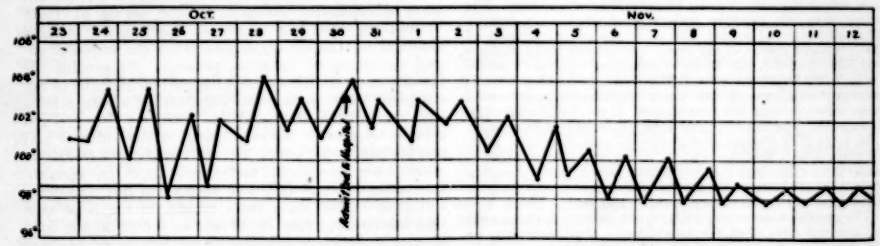
The organism does not grow on the ordinary laboratory mediums, but grows well on a special medium made of coagulated egg yolk diluted with 20 per cent. of water or milk, heated in an Arnold sterilizer for one-half hour at 70 C., with a second heating for one-half hour at 72 C.

In addition to egg yolk medium, Francis [3] has recently reported the cultivation of *Bacterium tularense* on serum glucose agar, blood agar, glucose blood agar, and on each of the foregoing mediums plus a piece of sterile fresh rabbit spleen. It grows slowly at room temperature, but at incubator temperature the growth is luxuriant under aerobic conditions. The first, second and third generation of cultures are uniformly pathogenic to guinea-pigs, producing death in from seven to eight days, and the pathologic lesions here are typical of plague and might be termed an acute infection. Later generations appear to lose their virulence, and produce a subacute or chronic infection resulting in death. The lesions here are quite different from those of the acute form, and bear a very strong resemblance to those of tuberculosis: the glands are converted into large cheesy or purulent masses with nodules in the spleen, liver and lungs, and the omentum and the peritoneum are studded with small caseous points or several large abscesses. Effusions into serous cavities are frequently seen.

Serologically, the serum of naturally or artificially immune animals agglutinates the organism as a general rule, while that of healthy susceptible animals does not, and agglutinating serum generally binds complement in the presence of the specific antigen.[4]

The first case of infection with *Bacterium tularense* known to occur in man and to receive bacteriologic confirmation was reported by Wherry and Lamb.[5] They succeeded in isolating the organism in a case in which a severe conjunctivitis was the local lesion, accompanied by rather severe constitutional symptoms. Vail [6] described this case clinically, and it showed a severe conjunctivitis of the left eye with a pus infection of the tear sac and a temperature curve and general symptoms of a septic infection. The second case, in which a conjunctivitis was also the local lesion but was accompanied by more marked constitutional symptoms, is reported by Wherry [7] and Sattler.[8] The conjunctivitis was very severe, with marked edema of the eyelid and swelling of the face, the condition resembling erysipelas. There were recurring chills with delirium, excessive prostration and a septic temperature rising to 104 F. The condition lasted for five weeks, and then, after a slight operation on the ocular conjunctiva, a relapse occurred with a complete return of the clinical picture, which lasted for two weeks. Both of these patients appear to have handled and dissected wild rabbits.

No further cases are known to have occurred until 1919, when Francis,[9] while investigating the disease of man in Utah popularly called "deer-fly fever," isolated *Bacterium tularense* from a typical case of this disease which resulted fatally and showed changes at necropsy similar to those produced in animals by this organism. In 1920, Francis [10] again investigated the disease in Utah and studied six additional cases of typical "deer-fly fever," isolating the organism in each, and thus definitely established the identity of *Bacterium tularense* as the etiologic agent of this disease, to which he applied the name "tularaemia." He defined the disease as a "specific infectious disease due to *Bacterium tularense* and transmitted from rodents to man by the bite of an infected blood-sucking insect or by the handling and dissection of infected rodents by market men or laboratory workers."



Clinical temperature chart, only the highest and lowest daily temperatures being noted.

These seven cases were initiated by the bite of an insect, probably the blood-sucking fly *Chrysops discalis*, which previously had bitten a jack rabbit infected with *Bacterium tularense*. Following the fly bite on some exposed surface of the body, the disease appears with pains, marked prostration, and fever of a septic type; and the lymph glands which drain the bitten area become inflamed and swollen, and usually suppurate. The fever lasts from three to six weeks, and convalescence is slow.

In the case about to be reported, the patient was engaged from Sept. 10, 1920, to Oct. 23, 1920 (the date of onset of illness), at the Hygienic Laboratory of the U. S. Public Health Service, in investigations of

3. Francis, Edward: Cultivation of Bacterium Tularense on Mediums New to this Organism, Pub. Health Rep. **37**: 102-115 (Jan. 20) 1922.
4. McCoy, G. W., and Chapin, C. W.: Bacterium Tularense the Cause of a Plague-Like Disease of Rodents, Pub. Health Bull. 53, January, 1912, pp. 17-23.
5. Wherry, W. B., and Lamb, B. H.: Infection of Man with Bacterium Tularense, J. Infect. Dis. **15**: 333-340, 1914.
6. Vail, D. T.: A Case of "Squirrel Plague" Conjunctivitis in Man, Ophth. Rec. **23**: 487, 1914.
7. Wherry, W. B.: A New Bacterial Disease of Rodents Transmissible to Man, Pub. Health Rep. **29**: 3387-3390, 1914.
8. Sattler, Robert: Acute Bacterium Tularense Conjunctivitis, Arch. Ophth. **44**: 265, 1915.
9. Francis, Edward: Deer-Fly Fever, a Disease of Man of Hitherto Unknown Etiology, Pub. Health Rep. **34**: 2061-2062 (Sept. 12) 1919.
10. Francis, Edward: The Occurrence of Tularaemia in Nature as a Disease of Man, Pub. Health Rep. **36**: 1731-1738 (July 29) 1921.

several strains of *Bacterium tularense*, isolated by Surgeon Edward Francis of the United States Public Health Service, from human cases of tularemia in connection with his investigations of this disease in man in Utah. In carrying out the details of this work, the patient inoculated and performed necropsies on a large number of animals, and he was probably more or less exposed to infection through the skin or through the respiratory passages many times.

REPORT OF CASE

G. C. L., aged 37, admitted, Oct. 30, 1920, discharged, Nov. 29, 1920, stated that he received three injections of antityphoid vaccine in 1914. Seven days before admission to the hospital he suddenly developed a chill with temperature rising to 101 F. There was no previous malaise, and he was in perfect health until the chill occurred. There were no pains about the chest or the abdomen, and a blood culture taken on the fifth day was negative. During the first four days the temperature varied daily from normal in the forenoon to 102 or 103 in the afternoon. The temperature curve steadied after the fifth day of the disease at from 101.5 to 103, and continued at this level until the twelfth day, when normal was reached in the forenoon.

On his admission to the hospital, on the seventh day of the disease, he appeared in good general condition, temperature 103, pulse 100, and no pains about the chest or body. The heart sounds were normal in all areas, and the borders were within normal limits. The lungs were normal. The abdomen was slightly distended. Liver dulness was normal. The spleen was not palpable, and no rose spots were present. The reflexes were normal, and there was no enlargement of the lymphatic glands in any area. The systolic blood pressure was 120; diastolic, 60. Blood examination revealed: erythrocytes, 5,990,000; leukocytes, 8,300; hemoglobin, 85 per cent.; polymorphonuclears, 80 per cent; lymphocytes, 5 per cent.; large mononuclears and transitionals, 13 per cent.; mast cells, 2 per cent. The urine showed 1,500 c.c. in twenty-four hours, with a trace of albumin, sugar negative, specific gravity 1.018, no casts, and a few leukocytes. Blood culture was negative after forty-eight hours of incubation, and a Widal test was positive in dilutions to 256 for typhoid organisms, but negative in all dilutions for *B. paratyphosus* A and B.

The condition continued without any definite features until the eleventh day, when the patient had a slight epistaxis; on the thirteenth day two small red spots appeared over the right lumbar region which showed the characteristics of "rose spots." Blood cultures were repeated with negative results, and repeated cultures of stools were negative for typhoid bacillus.

The temperature reached normal permanently on the seventeenth day, and remained normal throughout an uneventful convalescence; but it was at least six months afterward before the patient had fully recovered and was able to resume his normal level of activity and energy.

The case was first considered as being one of atypical or mild typhoid fever, the course having been influenced by the antityphoid vaccination the patient had received in 1914; but the occurrence of a similar disease in five other laboratory workers who were engaged in working with tularemia in animals aroused the suspicion that the condition was tularemia. After the patient returned to the hygienic laboratory for duty, immunologic studies were made on his serum by P. A. Surg. G. C. Lake, by both the complement fixation and agglutination reactions, using saline suspensions of *Bacterium tularense* as antigens, and each time it gave a positive reaction in fairly high dilutions. These tests were carried out in connection with an immunologic study of serums obtained by Francis from his Utah human cases of typical tularemia from which he had isolated *Bacterium tularense*, and also the serums from the five other laboratory workers who had contracted a disease similar to that described in this paper, while working with the disease in animals.[11]

The evidence that this case was one of tularemia lies in (1) the history of close contact with infective and highly virulent material in animals experimentally inoculated with this disease; (2) the positive immunologic reactions obtained, and (3) the fact that all the men, six in number, who worked extensively with the Utah strains of *Bacterium tularense* isolated by Francis developed an illness similar to the one described and gave positive immunologic reactions against the specific organism which causes the disease.

11. A detailed account of these serologic tests and other evidence proving that these laboratory cases were tularemia have been given by Lake, G. C., and Francis, Edward: Six Cases of Tularaemia Developing in Laboratory Workers, Pub. Health Rep. **37**: 392-413 (Feb. 24) 1922. An article on tularemia by Francis appears in THE JOURNAL, this issue, p. 1015.

METHODS FOR THE ISOLATION OF FILTER-PASSING ANAEROBIC ORGANISMS

FROM HUMAN NASOPHARYNGEAL SECRETIONS *

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In November, 1918, during the pandemic of influenza, we isolated from the filtered nasopharyngeal secretions of influenza patients, and from the lung tissues of rabbits intratracheally inoculated with these secretions, a hitherto undescribed organism which we called *Bacterium pneumosintes*.[1] The same organism was recovered from similar sources during the recurrent wave of epidemic influenza in the spring of 1920. Within the last few weeks we have again isolated identical or similar organisms from the nasopharyngeal secretions of influenza patients. At present the identification of the recently recovered bacteria is not complete. But during our observation of the strains isolated in 1918-1919 and in 1920, we have noted certain unreported facts relating to the cultural and morphologic characters of *Bacterium pneumosintes* which have been useful in the isolation of the recently recovered strains. It is our purpose in this communication to report these facts briefly, in the hope that this information may be of use to others in the bacteriologic study of respiratory infections of obscure etiology.

Bacterium pneumosintes, as originally isolated, was a minute bacilloid body of regular form, with a length about two to three times its breadth, measuring from 0.15 to 0.3 micron in the long axis. It passed V and N Berkefeld filters, multiplied slowly only under strictly anaerobic conditions in a medium composed of human ascitic fluid and a fragment of fresh rabbit kidney, and withstood glycerolation for a period of months. The organism decolorized by Gram's method, and stained with the usual basic dyes, of which Loeffler's alkaline methylene blue was the most suitable. *Bacterium pneumosintes* was identified as the cause of the characteristic clinical and pathologic effects induced in rabbits injected intratracheally with the nasopharyngeal secretions of influenza patients.

During artificial cultivation over a period of from two to three years, our strains of *Bacterium pneumosintes* have maintained their strictly anaerobic character. Hence it is necessary to cultivate them in an anaerobic jar, or under a petrolatum seal in mediums containing active reducing substances, such as fresh animal or vegetable tissue, dextrose or peptone. The stock cultures are being maintained in the medium

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. Olitsky, P. K., and Gates, F. L.: Studies of the Nasopharyngeal Secretions from Influenza Patients, J. A. M. A. **78**: 640 (March 5) 1921; J. Exper. Med. **33**: 125 (Feb.) 1921; ibid. **33**: 713 (June) 1921.

originally used, human ascitic fluid and fresh rabbit kidney, under a petrolatum seal. In this medium the strains have retained their original cultural and morphologic characters, and require transfer only at long intervals.

The ascitic fluid and rabbit kidney medium is an expensive and difficult medium to prepare, and we have tried various simpler methods of cultivation, some of which have been successful. The basis of the mediums which have proved to be suitable is a 1 per cent. dextrose, 1 per cent. peptone, 0.5 per cent. sodium chlorid, beef infusion broth, titrated to a hydrogen ion concentration of 7.4 on the Sörensen scale. This broth must be enriched with fresh rabbit blood, rabbit kidney tissue, fresh vegetable tissue [2] or by the growth of other organisms, as will be described. Solid and semisolid mediums may be made by the addition of agar in the proper proportion.

In fluid mediums in an anaerobic jar, or under a petrolatum seal, *Bacterium pneumosintes* grows in a diffuse cloud, too finely divided to give a typical bacterial shimmer. In a previously incubated medium, in which anaerobic conditions are already established, the cloud may become visible in from sixteen to twenty-four hours. The limit of growth is reached on the third to the seventh day at a hydrogen ion concentration of from 5.2 to 5.3. The cloud remains in suspension several days longer, and gradually falls to the bottom of the tube as a smooth, cream-colored sediment.

Surface colonies have been obtained on 5 per cent. rabbit blood agar plates incubated in an anaerobic jar. Dextrose is not necessary under these conditions. The jar must be capable of establishing strictly anaerobic conditions so that an indicator tube of methylene blue in dextrose broth is decolorized over night. We recommend the jar described by Brown,[3] which depends on the union of the oxygen with hydrogen under the catalytic influence of palladinized asbestos heated by a small resistance coil in a wire-screened chamber.

Grown under anaerobic conditions on the surface of blood agar plates, *Bacterium pneumosintes* forms extremely minute, round, convex, amorphous colonies with an entire edge and a colorless or grayish translucene. The medium is not precipitated or decolorized. The colonies are usually discrete, on account of their minute size, but may coalesce in the most crowded areas. The rather smeary growth forms a smooth suspension.

In stained smears, *Bacterium pneumosintes*, grown in enriched dextrose broth or on agar plates, develops as a minute, spindle-shaped bacillus, somewhat longer than the forms already described. The length may be increased to 1 micron, making the bacteria obviously bacillary. Short chains and diploforms are found. On old blood agar plates, involution forms have been observed. The longer, rod-shaped organisms have been fully identified with the original minute forms by serologic tests, and revert to the minute forms on transfer to the original ascitic fluid-rabbit kidney medium.

Rabbits immunized with *Bacterium pneumosintes* develop specific precipitins, agglutinins, bacteriotropins and complement-fixing bodies.

The growth of *Bacterium pneumosintes* in cultures contaminated with pneumococci, staphylococci, streptococci and hemophilic bacilli has already been reported.[1] Recently we have studied this symbiotic relationship, and find that other organisms may be used as a method of enrichment of the culture medium.

The most suitable organisms that we have tested for this purpose are *B. mesentericus, Bacillus coli, Bacillus typhosus*, and the pneumococcus Type III. In the case of *B. mesentericus*, the organism is grown for from eight to sixteen hours in aerated dextrose broth. A seal of petrolatum then checks growth promptly, since *B. mesentericus* is a strict aerobe, and an anaerobic condition is quickly established in the medium. If *Bacterium pneumosintes* is now inoculated, it grows rapidly and kills vegetative forms of *B. mesentericus* by acid production. Unless spores were introduced when the broth was seeded, a pure culture of *Bacterium pneumosintes* may often be obtained on the fourth or fifth day. It is necessary to prepare each lot of mediums with fresh transplants of *Bacillus mesentericus*. The few viable organisms, or spores, that may be carried over are insufficient to establish a growth in the second generation under a petrolatum seal.

Bacillus coli, Bacillus typhosus or pneumococcus Type III is grown in dextrose broth under a pretolatum seal until the bacterial cloud just becomes visible. Then the organisms are killed by exposure to 100 C. for from fifteen to thirty minutes. In the case of all these mediums, time is saved by a primary incubation to establish anaerobic conditions and insure sterility.

On the basis of these observations, we offer the following suggestions for the bacteriologic examination of nasopharyngeal secretions in cases of respiratory disease which apparently are not due to ordinary aerobic bacteria:

Nasopharyngeal washings should be obtained by a careful syringing of the nose and pharynx with from 20 to 40 c.c. of warm sterile salt solution, the washings being collected in a sterile kidney basin and transferred to a bottle with glass beads in which they may be thoroughly emulsified by shaking. After samples of the whole nasal washings have been spread on plates for aerobic cultivation, the remainder should be filtered through a tested candle, preferably a Berkefeld V. The filtered nasal washings should be inoculated in fairly large amounts, from 1 to 2 c.c., into human ascitic fluid-rabbit kidney medium and into incubated blood broth under a petrolatum seal. Broth enriched by the growth of other organisms, or with fresh vegetable tissue, may also be tried. Blood agar plates should be spread with the filtrate and incubated at least seven days in an anaerobic jar. The use of aerobic and anaerobic controls for each method of cultivation is essential.

At the same time, healthy rabbits should be intratracheally inoculated with 3 c.c. of the whole or filtered washings. Reference must be made to our former papers [1] on the subject for the details of this procedure and the effects which characterize the presence of an active, living agent in the inoculated material. In several instances we have obtained cultures after passage through the rabbits' lungs which were missed on cultivation of the original filtrate.

The use of blood plates in an anaerobic jar has proved especially useful for primary isolations from the filtered nasopharyngeal secretions and for the demonstration of organisms in a second generation after transfer from an original ascitic fluid-kidney medium. This medium seems to assure growth in the largest percentage of cases, but the ocular demonstration of the sparse primary growths is often exceedingly

2. Avery, O. T., and Morgan, H. J.: Proc. Soc. Exper. Biol. & Med. 19: 113 (Dec.) 1921.
3. Brown, J. H.: J. Exper. Med. 33: 677 (June) 1921.

difficult and unconvincing because of the minute size of filter-passing organisms and the presence of protein precipitate from the medium. Colony formation on blood plates, on transfer from the tissue medium, has therefore been of great assistance to us.

It seems not unlikely that *Bacterium pneumosintes* is only one of a number of related or unrelated, anaerobic, filter-passing organisms which may be obtained by appropriate methods from human sources. An endeavor should be made to obtain as many examples as possible of this new group or class of micro-organisms. Their classification and etiologic significance may await subsequent investigation.

THE KOTTMANN REACTION FOR THYROID ACTIVITY*

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Medical problems involved in thyroid dysfunction have come into particular prominence during the last few years. There are several causes of this interest, among which may be mentioned the successful isolation of at least one of the active constituents of the thyroid gland, the development of clinical methods for the study of basal metabolism, as well as the more frequent use of therapeutic measures previously seldom employed (irradiation, etc.). In view of its clinical importance it may be of interest to direct attention to a unique serum test for thyroid activity devised by Kottmann.[1] Relatively simple in technic, the test appears to us to possess considerable clinical usefulness, quite apart from its theoretical possibilities, a subject into which we wish to enter more fully in subsequent papers.

The theoretical premises of the reaction are the following: Kottmann assumed, on the basis of previous work with serum in pregnancy,[2] that certain physicochemical differences must exist in the serum in cases of thyroid dysfunction, and that the chief difference would exist in the state of dispersion of the serum colloids. Because of the peculiar relation of iodin to the glandular metabolism, he began his experiments with colloidal iodin preparations, using silver iodid for this purpose because of its well known photosensitivity. In the test as developed by him, certain phenomena commonly observed in photography play a rôle. Thus, when silver nitrate is added to potassium iodid, silver iodid is formed. In the presence of a protective colloid, the growth of the particles is retarded, depending on the protective property of the colloid used. In the photographic plate, a gelatin preparation is used for this purpose, and the prepared film (silver iodid or bromid dispersed in gelatin) is permitted to ripen. During this process of ripening, the colloidal particles of the silver salt gradually become larger and as they do so they become more photosensitive than when in the original highly dispersed state. If we substitute serum for the gelatin, a similar reaction might be anticipated, the particles of silver iodin formed becoming larger or smaller according to the protective property of the serum. The greater the photosensitivity of the silver iodid, the poorer the protective property of the serum used, and presumably, therefore, the coarser the colloidal dispersion of the serum itself. The less photosensitive the silver iodid, the greater the protective power of the serum and presumably the greater the state of dispersion of the serum colloids themselves.

TECHNIC

To 1 c.c. of clear serum are added 0.25 c.c. of a 0.5 per cent. solution of potassium iodid and 0.3 c.c. of a 0.5 per cent. solution of silver nitrate. The resulting suspension of silver iodid in the serum is next exposed for five minutes at a distance of 25 cm. to a 500 watt Mazda lamp (or other light of equal intensity). Then 0.5 c.c. of a 0.25 per cent. solution of hydroquinon is added and the color changes observed at five minute intervals.

In carrying out the test, a dark room is theoretically desirable; diffused daylight does not materially interfere with accurate results, according to our experience. The serum used should be freshly drawn, preferably in the morning before food has been taken, and should be free from hemoglobin and quite clear. The test tubes used should be carefully cleaned and of uniform size. We have found that a tube 1.5 by 8 cm. is quite satisfactory in that it permits thorough mixing of the reagents by gently agitating and rotating the tube. The reagents should be freshly prepared and accurately measured. A slight excess of iodid retards the reaction, while an excess of the silver nitrate accelerates the appearance of the color on development.

The color reaction that develops after the addition of hydroquinon varies with different serums. With serum from hyperthyroid cases, Kottmann found that the original yellowish color of the serum mixture persisted for a considerable time; in normal serums a brown color (silver iodid reduced to free silver) makes its appearance quite promptly; in serums from hypothyroid cases Kottmann found the development of the brown color reaction accelerated. The serum from individuals who have had bromids retards the reaction, and such medication must be excluded if the test is to be carried out.

CLINICAL RESULTS

When using this reaction, Kottmann found that the serum retarded the reaction in all twelve cases of hyperthyroidism; in fourteen cases of colloid goiter the reaction was accelerated in twelve, normal in one and slightly retarded in the other. A number of clinical cases diagnosed as "nervous" without clear evidence of hyperthyroidism were also examined, and in several of them a retarded serum reaction was observed. His control cases included a large number of serums obtained from pregnant women. In these the reaction was in the largest number within normal limits; only a few serums retarded the reaction slightly. Kottmann assumes that the alteration of the reaction in these cases is evidence of the alteration of the activity of the thyroid gland which has been observed by numerous clinicians.

We have studied the test in a relatively large series of cases of thyroid dysfunction as well as in control serums obtained from normal persons and patients ill

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1. Kottmann, K.: Kolloidchemische Untersuchungen über Schilddrüsenprobleme, Schweiz. med. Wchnschr. 1: 644, 1920.
2. Kottmann, K.: Cor.-Bl. f. Schweiz. Aerzte., 1917, Nos. 20, 29, 31.

from a variety of acute and chronic diseases. The material was obtained from the Lakeside Hospital in Cleveland, the Augustana Hospital, the Cook County Hospital, the Prenatal Clinics of the Michael Reese and St. Luke's Hospitals in Chicago, as well as from a number of private patients.

The results are summarized in the accompanying table. Group 1 consists of the cases of clinically positive hyperthyroidism, simple goiters (colloid, and adenomas without hyperthyroidism) and normal controls. Of the seventy evident cases of hyperthyroidism, sixty-five delayed the Kottmann reaction in a typical manner. In two cases the reaction was only incompletely retarded; in two the serum reaction was normal, and in one accelerated. In the latter three cases the basal metabolic rate was increased (in one case as much as plus 65 per cent.) and there was no doubt of the activity of the pathologic process. In the colloid goiters

KOTTMANN REACTION IN FOUR HUNDRED CASES

	Number of Serums Examined	Accelerated	Normal	Slightly Retarded	Markedly Retarded
Group 1—					
Hyperthyroidism	70	1	2	2	65
Simple goiters	49		49		
Normal persons	139	..	136	3	..
Group 2—					
Bromids	11	..	..	..	11
Group 3—					
Lobar pneumonia	6	2	3	1	..
Erysipelas	1	1	..	..	..
Scarlet fever	1	1	..	..	..
Tonsillitis	2	..	2	..	..
Endocarditis	1	..	1	..	..
Lung abscess	1	..	1	..	..
Osteomyelitis	1	..	1	..	..
Periostitis	1	..	1	..	..
Bronchitis	1	..	1	..	..
Articular rheumatism	3	..	3	..	..
Choroiditis	1	..	1	..	..
Cystitis	1	..	1	..	..
Influenza	1	..	1	..	..
Group 4—					
Carcinoma	7	..	5	2	..
Diabetes	2	..	1	1	..
Pernicious anemia	5	..	5	..	..
Hodgkin's disease	1	..	1	..	..
Group 5—					
Tuberculosis	3	..	2	1	..
Syphilis	10	..	10	..	..
Group 6—					
Gynecologic lacerated cervix; pyosalpinx fibroids, etc.	14	..	14	..	..
Normal pregnancy	13	..	12	1	..
Toxemia of pregnancy	1	..	1	..	..
Placental blood	20	..	19	1	..
Group 7—					
Organic heart disease	8	..	8	..	..
Psychoses	8	..	8	..	..
Paresis	2	..	2	1	(bromids ?)
Tabes	1	..	..	1	(bromids ?)
Poisoning: iodin; plumbism	2	..	2	..	..
Fright (minor gunshot wound)	2	..	..	..	2
Radial paralysis	1	..	1	..	..
Prostatic hypertrophy	1	..	1	..	..
Cholecystitis	3	..	2	1	..
Chronic appendicitis	1	..	1	..	..
Gastric ulcer	3	..	3	..	..
Fracture femur	1	..	1	..	..

and the simple adenomas, the reaction was in all cases within normal limits, and in a certain number of the cases the reaction was accelerated. The normal controls (139) were with three exceptions normal in reaction. In three cases the reaction was slightly retarded.

Group 2 consists of ten patients with a number of diseases (generally psychoses) who were on bromid medication. In all cases the serum retarded the reaction. This corresponds to the effect of the bromids in the technic of photographic development.

Group 3 consists largely of cases of infectious disease. Among these the reaction was only in one instance slightly retarded. In the more severe infections there was evidence of an acceleration of the reaction.

In Group 4, which included a number of serums from cachectic patients, several serums inhibited the reaction to some extent.

The serums from patients with tuberculosis and syphilis (Group 5) were virtually within normal limits, as were also the serums obtained in a series of cases of pregnancy, placental blood and gynecologic cases (Group 6).

Group 7, miscellaneous cases, included one case of paresis and one of tabes in which the reaction was inhibited slightly (the therapeutic use of bromids or iodids could not be ruled out in these serums), and two cases of great excitement and fright associated with minor gunshot wounds. In both cases the serum retarded the reaction markedly.

COMMENT

The Kottmann reaction seems to offer an index of thyroid activity, and as such should be of value in clinical work. The test is simple, is rapidly carried out, and if we may judge from the results in the cases here presented, few other clinical conditions yield serums in which the reaction is delayed to a degree at all comparable with the reaction obtained with exophthalmic serums. Some retardation is noted in other conditions, such as cachexia, and occasionally in pregnancy and in severe excitement, but these conditions should in no way interfere with the clinical interpretation of the test. In only a few cases of clinically active hyperthyroidism was the typical reaction absent (three out of seventy).

To be of greatest value, a test of this kind should be studied in a large series of borderline cases, including early tuberculosis and neurasthenia, because they are usually the ones in which a test of this nature is really needed. Unfortunately, we have no large group of such conditions at our command, but we are of the impression from observations so far made that in just this group the test will be of great value.

Kottmann calls attention to the fact that the administration of bromids to the patient, as well as the addition of bromid directly to the serum, will inhibit the reaction; our observations confirm his experience, and we have also noted that the administration of iodids will tend to retard the reaction to some degree, not however, to the extent of the bromids. This must be kept in mind when the test is performed.

CONCLUSIONS

In a study of 400 serums obtained from patients with thyroid dysfunction, as well as those ill with other diseases, and a large group of normal persons, the photochemical serum reaction devised by Kottmann yielded a close index of the thyroid activity. The test is simple and should be of material aid in the clinical as well as the experimental investigation of thyroid problems.

Vasomotor Activity in Brain and Epilepsy.—The evidence in favor of vasomotor activity in the brain is abundant, and it seems incredible that pathologic variations in the cerebral circulation should not be associated with definite clinic manifestations. The characteristic rapidity and suddenness of vascular changes, and their characteristic tendency to recurrence, would allow of recurrent phases of disordered cerebral function, and on this hypothesis many of the phenomena of epilepsy can be explained fully.—Percy Sargent, *Brain* **44**:318, 1921.

HYDROGEN ION CONCENTRATION STUDIES

ON DISTILLED WATER, PHYSIOLOGIC SODIUM CHLORID, GLUCOSE AND OTHER SOLUTIONS USED FOR INTRAVENOUS MEDICATION

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The hydrogen ion concentration of drugs and chemicals used for therapeutic or investigative purposes has never been given any extended consideration. It has been repeatedly observed by clinicians that the intravenous injection of glucose, physiologic sodium chlorid, phenolsulphonephthalein and other solutions is followed by reactions of the following character with varying frequency: The patient, in from a few minutes to a half hour, is seized with a chill accompanied with a rise in temperature, followed by prostration and great weakness. The phenomenon tends to disappear within twenty-four hours, although there is reason to believe that death has occasionally resulted. A similar phenomenon is noted following transfusions by the citrate method and after arsphenamin injections.

We believe there is a relationship between these reactions and the hydrogen ion concentration of the injected fluids. We advance the hypothesis that when fluids of a much higher or lower concentration than that of the blood are introduced into the circulation at a rate or in an amount in excess of the capacity of the blood to buffer or neutralize them, reactions will occur. We base this theory on clinical observations and the analyses of fluids, the intravenous use of which was followed by reactions.

In this study we shall show that some of the fluids in common use have hydrogen ion concentrations much beyond the limits of safety. The suggestion of this problem developed as the result of many conferences which we had with Drs. S. F. Acree, E. A. Slagle and R. R. Mellon of the pathologic department of the Highland Hospital of Rochester, who were engaged in an investigation of the hydrogen ion concentration of bacteriologic mediums and the use of buffers therein.[1] We were greatly indebted to them for advice and material, particularly to Dr. Slagle, who assisted us in the early stages of the study. The apparatus used was the Acree model. The buffer tablets referred to were prepared by Dr. Slagle from monopotassium and dipotassium phosphate salts in such proportions and amounts that when one tablet weighing approximately 0.1 gm. is dissolved in 20 c.c. of freshly distilled water, it will have a p_H of the desired value. When such a tablet is added to from 20 to 100 c.c. of a solution of higher or lower p_H, it will serve to adjust it to a level approximating the p_H of the buffer used. This will be evident from an examination of the experiments.

Before considering the experimental aspects of the investigation, it will be helpful to those who have not a working familiarity with the subject to know that the hydrogen ion concentration of pure distilled water, expressed for purposes of brevity as p_H, is 7.0; normal acid p_H is 2.0; normal alkaki p_H is 14.0. Whole human blood has a p_H range of from 7.3 to 7.5. According to Van Slyke, it is fairly constant at 7.4. Hydrogen ion concentrations of blood or tissues above or below these figures are not compatible with life. A patient becomes comatose before a p_H of 7.0 is reached, or convulsions ensue before a p_H of 7.5 develops.

When a solution of higher or lower hydrogen ion concentration than that of the blood is introduced into the circulation, the normal buffer substances of the blood, namely, proteins, plasma bicarbonates and phosphates, serve to correct the faulty reaction and thus protect the body against injury. It is well known that many tissues of the body are extremely sensitive to changes in chemical reaction, particularly nerve and brain structures. When a solution with an abnormal hydrogen ion concentration is injected intravenously in greater amount than the blood can buffer, or at a rate in excess of the capacity of the blood to neutralize it, then the above mentioned reactions or death may follow. In like manner, when a solution with an abnormal p_H is injected subcutaneously, it must necessarily produce a localized temporary tissue acidosis or alkalosis. We believe that this is the explanation of the local reactions evidenced as "sore arms" commonly seen in hospital wards following hypodermic medication.

The first investigations dealt with solutions as prepared by the pharmacal and surgical departments of the hospital for clinical use. These were checked against similar solutions prepared in the laboratories. We then discovered that the water used as a solvent is a very variable factor of the utmost importance. Accordingly, we made a special study of this problem. In this first paper we shall present our data on the hydrogen ion concentration of water, glucose and physiologic sodium chlorid solutions. In a second study we shall consider sodium citrate, serums and antitoxins, and various preparations put up in tablet and ampule form for intravenous medication.

STUDIES ON WATER.

EXPERIMENT 1.—*Studies on tap water.* As drawn from the faucet on different days, it has a p_H range of from 8.27 to 8.77. Fresh unheated tap water, p_H 8.27; boiled five minutes, at atmospheric pressure, p_H 8.30; boiled ten minutes, at atmospheric pressure, p_H 8.62; autoclaved twenty minutes, 15 pounds pressure, p_H 7.74.

Comment.—The tap water of Rochester is mildly alkaline, owing to dissolved basic salts. Repeated tests show that boiling lowers and autoclaving raises the p_H because of changes in the amount of dissolved gases and salts induced by the heat and pressure.

EXPERIMENT 2.—*Studies on distilled water.* As stated before, absolutely pure, fresh distilled water has a p_H of 7.0. As will be seen from the following tests, it is virtually impossible to prepare and keep by the means in common use in clinical laboratories distilled water of this hydrogen ion concentration. A Stokes still is used for our routine service. Analyses were made of the stock distilled water used in the hospital in the preparation of solutions. One specimen had a p_H of 6.89; two other samples were above p_H 6.0; the other seven had a p_H range of from 5.05 to 5.84.

EXPERIMENT 3.—*The effect of single and double distillation, using an all-glass still of simple construction.* Tap water, p_H 8.27; first distillate (first 10 c.c.), p_H 7.30; first distillate (after 200 c.c. had been distilled), p_H 6.90; second distillate (first 10 c.c.), p_H 6.99; second distillate (after 200 c.c. had been distilled), p_H 6.80.

Comment.—Distilled water becomes acid immediately after distillation, owing chiefly to the absorption of carbonic acid gas from the atmosphere.

1. Mellon, R. R.; Acree, S. F.; Avery, Pauline M., and Slagle, E. A.: The Ionization Constants of Glycerophosphoric Acid and Their Use as Buffers, Especially in Culture Mediums, J. Infect. Dis. **29**:1-6 (July) 1921. Acree, S. F.; Mellon, R. R.; Avery, Pauline M., and Slagle, E. A.: A Stable Single Buffer Solution p_H 1 to p_H 12, ibid. **29**:7-10 (July) 1921.

EXPERIMENT 4.—Double distilled water, glass stoppered flask sealed with paraffin, p_H 6.80; after twenty-four hours, p_H 6.83; after thirty-one hours, p_H 6.25; after forty-eight hours, p_H 5.23.

EXPERIMENT 5.—Double distilled water, flask sealed with paraffined cotton plug, p_H 6.80; after twenty hours, p_H 6.90; after twenty-seven hours, p_H 6.50; after forty-eight hours, p_H 5.32.

EXPERIMENT 6.—Double distilled water, flask stoppered with clean cork, p_H 6.80; after twenty-four hours, p_H 7.05; after thirty-one hours, p_H 6.14; after forty-eight hours, p_H 5.60.

Comment.—These tests were made to duplicate common methods of storing distilled water for clinical use. The increased acidity with age, even in well stoppered containers, is noted.

The following tests were made to determine the influence of proximity to bottles containing fuming chemicals:

EXPERIMENT 7.—Double distilled water, flask stoppered with cotton plug and kept away from chemical fumes, p_H 6.8; after twenty-four hours, p_H 7.07; after thirty-one hours, p_H 6.41; after forty-eight hours, p_H 5.75.

EXPERIMENT 8.—Double distilled water, flask stoppered with clean cork and kept near bottle of concentrated hydrochloric acid, p_H 6.80; after twenty-two hours, p_H 6.98; after twenty-nine hours, p_H 6.19; after forty-six hours, p_H 6.04.

EXPERIMENT 9.—Double distilled water, flask stoppered with clean cork and kept near bottle of concentrated ammonium hydrate, p_H 6.80; after twenty-two hours, p_H 6.60; after twenty-nine hours, p_H 7.02; after forty-six hours, p_H 6.12.

This experiment was repeated, using flask stoppered with cotton plug. The results were virtually identical.

Comment.—It will be observed that distilled water subjected to different storage conditions becomes acid to about the same degree in a given time. Proximity to bottles containing fuming acid or alkali had no appreciable influence. As stated before, the acidity of distilled water is due to the absorption of carbonic acid from the atmosphere, which has a high degree of penetrability. We feel, therefore, that the practical preparation of distilled water at the theoretical hydrogen ion concentration of 7.0 is difficult, and to store or keep it for any length of time by ordinary means is quite impossible. Old stock distilled water is quite likely to be very acid. Its use for the preparation of medicines or chemicals for intravenous injection is very questionable, if not dangerous.

STUDIES ON GLUCOSE

Glucose solutions are now commonly used in hospitals in the treatment of pneumonia, in the shock and prostration following serious surgical operations, in obstetric practice and so on. Clinicians are familiar with the reactions which frequently follow its use. The method of preparation formerly employed in this hospital was to dissolve 100 gm. of glucose in 1,000 c.c of stock distilled water, and autoclave at 15 pounds pressure for 20 minutes. A three or four days' supply was usually prepared. A number of samples of this stock glucose solution were tested on different occasions and found to have a p_H of less than 5. The following tests were made to determine the cause of this acidity:

EXPERIMENT 10.—Glucose solution, 10 per cent. stock distilled water, fresh, unheated, p_H 6.20; after boiling ten minutes, p_H 5.47; after boiling twenty minutes, p_H 5.17; after boiling thirty minutes, p_H 5.00.

Comment.—Repeated tests have shown that boiling definitely lowers the p_H of glucose solutions.

EXPERIMENT 11.—Glucose solution, 10 per cent. stock distilled water, fresh, unheated, p_H 6.20; after standing at room temperature in laboratory twenty-four hours, p_H 5.15; after standing at room temperature in laboratory forty-eight hours, p_H 4.15.

Comment.—Repeated tests show that glucose, when unheated, becomes rapidly acid with age so that after twenty-four hours it is quite unsafe for therapeutic purposes. The glucose used in the hospital and in the preceding tests was manufactured by the American Corn Refining Company. A comparative study of other well known brands was made, as is shown in Table 1.

EXPERIMENT 12.—Glucose solutions, 10 per cent (prepared with stock distilled water, p_H 5.15). The results are given in Table 1.

Comment.—Two other brands of glucose of unknown manufacture were tested with similar results. It is evident from the foregoing that acid production occurs in autoclaved solutions from several well known brands in common use in American hospitals and laboratories. In practice, distilled water is used in preference to tap water because a clearer solution results. The autoclaved product, even with alkaline tap water, is far too acid for safe clinical use. We have attempted to learn the nature of the acid present with the following results: No traces of sulphuric, nitric, acetic or phosphoric acid were dicovered. A well marked reaction for hydrochloric acid was obtained. The hydrolysis of starch to glucose by means of hydrochloric acid is a standard method of glucose manufacture.

TABLE 1.—FINDINGS IN EXPERIMENT 12

Manufacturer	Fresh Unheated Solution p_H	After Autoclaving p_H	24 Hours After Autoclaving p_H
Merck, C. P.	6.35	4.59	4.56
Digestive Ferments Co. (Bacto-Dextrose)	6.65	4.53	4.53
Amer. Corn Ref. Co.	6.59	4.51	4.50
Experiment repeated, using tap water p_H 8.27 as solvent.			
Merck	8.58	4.90	4.82
Digestive Ferments Co. (Bacto-Dextrose)	8.24	5.08	5.01
Amer. Corn Ref. Co.	8.20	5.84	5.35
Experiment repeated using tap water with barium hydrate in suspension distilled through glass, p_H of distilled water 7.48.			
Merck	7.50	4.65	4.60
Digestive Ferments Co. (Bacto-Dextrose)	7.42	5.15	5.07
Amer. Corn Ref. Co.	7.12	4.73	4.59

The attempt was then made to prepare sterile glucose solutions which would have a hydrogen ion concentration approximating that of the body (p_H 7.4). Solutions with a p_H below 6.5 are likely to produce reactions, and those below 5.5 must be regarded as quite toxic when given at a rate or in an amount in excess of the capacity of the blood to buffer.

EXPERIMENT 13.—*To show the effect of buffers in correcting the acidity which is produced in autoclaved glucose solutions.* Buffer tablets composed of monopotassium and dipotassium phosphate salts, each weighing approximately 0.1 gm. of the indicated p_H, were used for this purpose.

Glucose solution, stock 10 per cent., autoclaved, p_H 4.82; 20 c.c. buffered with one p_H 6.96 tablet, p_H 6.35; 20 c.c. buffered with two p_H 6.96 tablets, p_H 6.50; 20 c.c. buffered with one p_H 7.94 tablet, p_H 7.16; 20 c.c. buffered with two p_H 7.94 tablets, p_H 7.00.

Comment.—The acidity of glucose solutions may be corrected by the addition of sterile nontoxic buffers. The use of buffer tablets makes it a very simple procedure. One must be sure, however, that a solution is sufficiently buffered to counteract any additional acid formation which may take place before the solution is used. This is illustrated by the following experiments:

EXPERIMENT 14.—*To show the quantitative effect of buffers in the correction of acid production in glucose solutions.*

TABLE 2.—FINDINGS IN EXPERIMENT 14

Amount of Solution C.c.	Number of Tablets Added p_H 7.94	p_H of Solution After Adding Buffer p_H	20 Hours Later p_H	44 Hours Later p_H
100	1	7.02	6.79	6.51
100	2	7.12	7.06	6.96
100	3	7.23	7.20	7.16
100	4	7.43	7.40	7.35

Stock 10 per cent. glucose solution, p_H 4.53, autoclaved, 24 hours old at beginning of tests. Buffer tablets, p_H 7.94 (Table 2).

Comment.—We have had no reactions following intravenous use of glucose solutions buffered properly.

In preparing a glucose solution for use it should be thoroughly dissolved, filtered and autoclaved. The sterile buffer tablets should then be added. If added before autoclaving, they are likely to be precipitated out of solution with the result that the solution again becomes acid.

Experiment 15.—*To show the effect of autoclaving on buffered glucose solutions.*

(*a*) Control test solution not buffered: Glucose solution, 10 per cent., freshly prepared, p_H 7.01; after autoclaving, p_H 4.63; twenty-one hours after autoclaving, p_H 4.59.

(*b*) Glucose solution, stock, p_H 7.01; 50 c.c. buffered with one p_H 7.94 tablet, p_H 7.04; after autoclaving, p_H 5.45; twenty-one hour after outoclaving, p_H 5.39.

Boiling at atmospheric pressure also leads to acid development in buffered glucose solutions, as shown by the following tests:

Experiment 16.—Glucose solution, stock 10 per cent., autoclaved, p_H 4.97; 20 c.c. buffered with one p_H 7.94 tablet, p_H 7.35; boiled for one minute, p_H 7.25; boiled for five minutes, p_H 7.00; boiled for ten minutes, p_H 6.66.

Hydrogen Ion Concentration Studies on Physiologic Sodium Chlorid Solutions

Experiment 17.—Physiologic sodium chlorid solution prepared from compressed tablets (Parke, Davis & Co.), one tablet, 16.4 grains, dissolved in 4 fluidounces of stock distilled water and autoclaved for twenty minutes at 15 pounds pressure, as used in surgery.

Physiologic sodium chlorid solution, as prepared above, fresh, p_H 6.4; after twenty-five days, p_H 6.4; 20 c.c. buffered with one p_H 7.4 tablet, p_H 7.3.

Experiment 18.—Physiologic sodium chlorid solution, prepared in laboratory, salt of unknown manufacture. Dissolved in tap water, not sterilized, p_H 8.27; dissolved in stock distilled water, not sterilized, p_H 6.6.

Experiment 19.—(*a*) Physiologic sodium chlorid solution, not sterilized; prepared by serologic laboratory for Wassermann technic, 8.5 gm. of sodium chlorid (Baker and Adamson C. P.) dissolved in 1,000 c.c. of stock distilled water, p_H 4.96.

(*b*) This test was repeated, using stock distilled water and autoclaved, p_H 4.95.

(*c*) A third physiologic sodium chlorid solution was prepared, using sodium chlorid obtained from the Will Corporation, manufacturer unknown, p_H 5.5.

(*d*) A fourth physiologic sodium chlorid solution was prepared from sodium chlorid (Baker and Adamson C. P.) and stock distilled water, p_H 4.95.

(*e*) A fifth physiologic sodium chlorid solution put up in ampules, prepared by the Intra Products Company, p_H 4.95.

Experiment 20.—Three different makes of sodium chlorid were dissolved in the same lot of stock distilled water on the same day and the solutions sterilized.

Physiologic sodium chlorid (Baker C. P.), p_H 7.9; (Bausch and Lomb C. P.), p_H 5.64; (Baker and Adamson C. P.) p_H 6.4.

Comment.—It is evident from the foregoing tests that when the common method of making physiologic sodium chlorid solution is employed, namely, dissolving so-called chemically pure sodium chlorid in stock distilled water, a highly acid solution may result which might prove harmful in clinical use. This acidity may be due to the salt or to the distilled water or to both. It is obvious that a salt solution which is physiologically normal for the body must not only be correct in salt content but also in hydrogen ion concentration. In making this, tap water is much to be preferred to distilled water. This acid saline was also found to interfere in colloidal gold tests. Physiologic sodium chlorid solution may easily be rendered safe for therapeusis by proper buffering.

Conclusions

1. The hydrogen ion method of determining the reactions of fluids used for therapeusis or clinical investigation is of great importance.

2. When fluids that have a higher or lower hydrogen ion concentration than that of the blood are injected into the circulation at a rate or in an amount that the blood cannot neutralize or buffer, reactions characterized by chills and prostration follow.

3. By the hydrogen ion method we have determined that distilled water, if not carefully prepared or when stored as a stock solution, becomes highly acid so that when used as a solvent it may produce a solution with a much higher hydrogen ion concentration than that of the body.

4. Glucose solutions become highly acid when boiled, autoclaved or when permitted to stand for a few hours. Stock glucose solutions as used clinically are highly acid.

5. Physiologic sodium chlorid solution, when prepared with stock distilled water or impure salt, may be very acid. A normal or physiologic salt solution should not only contain that amount of salt which will make it isotonic with the blood, but it should also have the same hydrogen ion concentration.

6. These solutions may be easily corrected as to hydrogen ion concentration by the addition of buffer salts. The buffering of glucose and physiologic sodium chlorid solutions in our experience has served to prevent reactions.

7. We have studied and will report in a succeeding paper the hydrogen ion concentration of sodium citrate solutions, serums, vaccines and antitoxins, arsphenamin preparations, neo-arsphenamin and hypodermic medication in both tablet and ampule form.

THE PRACTICAL APPLICATION OF "BUFFERS"

IN THE REGULATION OF THE HYDROGEN ION CONCENTRATION OF INTRAVENOUS SOLUTIONS *

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The paper of Williams and Swett [1] which appears elsewhere in this issue, directs attention to the variations existing in the hydrogen ion concentration, p_H, of solutions which modern internal medicine has found necessary to introduce directly into the tissues. The well known severe reactions often attending such medications, together with their etiologic obscurity in many cases, has led us to consider seriously the p_H factor, which heretofore has been the subject of little if any inquiry in this connection. It is our purpose only to discuss, in its fundamental and practical aspects, how this factor can be controlled by the use of buffers, leaving to the writers mentioned above the results of the clinical application of the procedures.

It is our intention, therefore, not to make positive statements regarding the efficacy of these procedures, but to call attention to the reasonableness of imitating as closely as possible the p_H of the blood, when it is desired to inject foreign materials into this important tissue. Particularly is this impressive when one realizes that the blood under normal conditions maintains a quite constant reaction, and this by means of the same sort of "buffers" that, in imitation, we have employed with these solutions.

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1. Williams, J. R., and Swett, Madeleine: Hydrogen Ion Concentration Studies on Distilled Water, Physiologic Sodium Chlorid, Glucose and Other Solutions Used for Intravenous Medication, J. A. M. A., this issue, p. 1024.

The term "buffer" has in recent years come into such general use in this connection that it is desirable for those associated with practical medicine to know exactly what is implied by the term, and to be intelligent regarding the practical aspects of the process. Perhaps a rather homely illustration will be helpful. The springs of an automobile obviously absorb, or "soak up," the shocks that would otherwise be transferred to the occupants of the car. Now, if we regard as shocks the hydrogen ion, which is the cause of acidity, and the hydroxyl ion, a cause of alkalinity, we may fairly regard as buffers any substances which will absorb such ions into their molecules.

The phosphates and carbonates are familiar examples of such substances, because they are salts of weak acids. Just why are the salts of weak acids good buffers? It is necessary to remember that weak acids are weak, and strong acids, strong, just in proportion as their hydrogen is capable of being dissociated or split off from the molecule when the latter substance is dissolved in water. Thus it becomes possible for sodium acetate, which is a salt of a weak acid, practically to neutralize a strong corrosive, such as hydrochloric or muriatic acid; for when these substances are mixed, the "strong" hydrogen ion of the hydrochloric replaces the sodium in the acetate, forming acetic acid. In other words, the same hydrogen, which was so corrosive when united with chlorin, becomes almost inactive when incorporated in the acetic acid molecule, because of the fact that, in acetic acid, the hydrogen is free only to a slight extent to split off or dissociate, while in hydrochloric acid it is for the most part split off or ionized. Similarly, the sodium of the acetate, when replaced by the hydrogen, in turn combines with the chlorin of the hydrochloric acid, and the harmless common salt is the result. Such changes take place according to the formula:

Sodium acetate	+	hydrochloric acid	⇄	sodium chlorid	+	acetic acid
$CH_3COO\,Na$	+	$Cl\,H$	⇄	$NaCl$	+	CH_3COOH

If, for example, a living cell could survive in a medium containing sodium acetate, it can readily be seen how a comparatively large amount of hydrochloric acid could be added to that medium without killing the cell. The sodium acetate protects or buffers the cell from attack by the acid just as, in a political sense, neutral or buffer states separate the belligerent ones. The phosphates and carbonates of the blood in diabetes protect the body cells from acid by the mechanism just discussed; and it is only when these salts are exhausted that the concentration of acid (hydrogen ions) increases to the point at which the clinical complex of acidosis results. Although it may be reasoned that acid or alkaline solutions injected into the blood will be automatically cared for in the same way, the rate at which they are injected may necessitate readjustments so sudden as to upset, temporarily, interdependent colloidal mechanisms of delicate balance. Such subversions may be an important factor in the untoward reactions mentioned above, reactions often spoken of as anaphylactoid.

Studies by us [2] leading up to the buffering of intravenous solution were started in this laboratory two years ago, being applied at first only to bacteriologic mediums. It was while searching for the cause of the spontaneous deterioration of certain indicators that we were led to study their purity as measured by their p_H value. These observations revealed a high acid point for some of these dyes, particularly phenolsulphonephthalein, which is so extensively used in kidney efficiency tests. As we had been told previously by Dr. Williams of the apparent toxicity of certain batches of this dye in the marketed product, it occurred to us that there might be a correlation between the p_H and the toxicity.

Recent literature has directed considerable suspicion toward the employment of sodium citrate for transfusion purposes. As the result of untoward and even fatal reactions which he observed, Bernheim [3] says: "In the light of our more mature experience, it is utterly ridiculous to pretend any longer that the reactions that follow the giving of citrated blood are harmless and susceptible of being ignored."

Unger,[4] who quotes Bernheim, concurs in his opinion and surmises that certain of these results may be connected with the action of sodium citrate on the red blood cells and its deteriorating effect on the complement of the serum. A very severe result was observed by J. R. Williams in his service at this hospital. An electrometric test of the sample of citrate used showed a p_H of 10.5. As the tribasic sodium salt of citric acid has a p_H of about 8, it is obvious that free alkali was present in this sample of a product marketed especially for transfusion work. Neutralization of this alkali with acid made it possible to give the same patient a transfusion from the same donor without untoward incident. In the interest aroused by this occurrence, one of our laboratory assistants rashly subjected herself to a reinjection of her own blood drawn into the unbuffered citrate. Her reaction was similar to that of the patient, although by no means so severe. Whether there is any relation between that experience and the fact that this young woman was afflicted with recurrent boils for more than a year following this (quite unauthorized) experiment can only be conjectured.

To our knowledge, the p_H factor in sodium citrate has not heretofore been adduced as a possible explanation of its toxic action; but in light of the foregoing result, the possible bearing of this factor has been made the subject of studies to be presented later.

Our attention was first directed to the wide range in reaction of sodium citrate by Miss Evans of the Hygienic Laboratory, Washington, at the meeting of the Society of American Bacteriologists in December, 1920, where she reported on the deleterious influence of acidity on phagocytosis. In three market samples obtained by her the range varied between p_H 5 and 8. In light of her work, which is as yet unpublished, it seems highly probable that Unger's [4] conclusions as to the vulnerability of the white cells to citrate are not well grounded, as he gives no evidence of taking into consideration this important factor of the p_H of his solution. To what extent this factor may be of importance in the anticomplementary action of citrate is also a subject of study in this laboratory.

In one of our published studies [5] dealing with the buffering of bacteriologic mediums with glycerophosphates, mention is made of the desirability of employing compressed tablets of the buffer salt, previously

2. Mellon, R. R.; Acree, S. F.; Avery, Pauline M., and Slagle, F. A.: The Ionization Constants of Glycerophosphoric Acid and Their Use as Buffers, Especially in Culture Mediums, J. Infect. Dis. **29**: 1-6 (July) 1921; A Stable Single Buffer Solution, p_H 1 to p_H 12, ibid. **29**: 7-10 (July) 1921.

3. Bernheim, B. M.: Whole Blood Transfusion and Citrated Blood Transfusion, J. A. M. A. **77**: 275 (July 23) 1921.

4. Unger, L. J.: The Deleterious Effect of Sodium Citrate Employed in Blood Transfusion, J. A. M. A. **77**: 2107 (Dec. 31) 1921.

5. Mellon, Acree, Avery and Slagle, Footnote 2, first reference.

sterilized. It is well known, of course, that phosphates readily precipitate out of solution on heating, especially in neutral or slightly alkaline solutions. Yet it is obviously desirable to use the phosphates in injection fluids whenever possible. For this reason it was thought feasible to sterilize the salt dry and dissolve it in the cold.

The general plan of procedure followed in the preparation of these buffer tablets, so-called, is described by Prideaux.[6] Dipotassium hydrogen phosphate, for example, can be mixed with potassium dihydrogen phosphate in various proportions of each, such that a p_H may be obtained at any point between 4.49 and 10.

THE PHOSPHATE STANDARDS

C.c. N/15 Na_2HPO_4	C.c. N/15 KH_2PO_4	— log [H]
0	10	4.49
0.1	9.9	4.94
0.25	etc.	5.29
0.5		5.59
1.0		5.91
2		6.24
3		6.47
4		6.64
5		6.81
6		6.98
7		7.17
8		7.38
9		7.73
9.5		8.04
9.75		8.34
9.9		8.68
10.0		9.18

It should be mentioned that pelleting and dry sterilizing of salts introduce technical difficulties that do not come within the scope of this paper.

In a previous paper[7] describing a single standard buffer solution for colorimetric use, 20 c.c. was the quantity decided on for use as a standard. Accordingly, the buffer tablets of any p_H value which could also be employed for a single standard were made so that one of them dissolved in 20 c.c. of distilled water gave the desired p_H. As the result of experiment, it was found that for buffering purposes it was desirable to make the tablets of such concentration that dilution to four or five times the standard dilution of 20 c.c. could be effected without materially altering the p_H. From the practical standpoint this reserve buffer capacity on the part of the tablet has been deemed advisable. Its actual application to buffering such a solution as glucose, for example, is adequately set forth in the paper by Williams and Swett in this issue.

They have also shown that our so-called "pure" water, as usually distilled, is by no means neutral in reaction. This can only mean that impurities are still present, if only in small amount, for perfectly pure water is our standard of neutrality. Even perfectly pure water is thought to be slightly dissociable into its component hydrogen cations and hydroxyl anions. The point of neutrality has a p_H of 7.12 at 18 C.

Since the symbol p_H, or, as it is often written, p-H, is so commonly used, perhaps its definition will be of value. It is used to express the concentration of hydrogen ions, or the absolute acidity, in contrast to what is known as titratable acidity. For example: tenth normal hydrochloric acid and tenth normal acetic acid will both require the same amount of alkali by titration, since each contains the same chemical equivalent of acid. Yet the p_H of the former is 1 and of the latter, about 3, simply because, as has been mentioned before, hydrochloric acid, being a strong acid, is dissociated to the extent of about 91 per cent., while acetic acid is dissociated only to the extent of 1.3 per cent.

Since we think readily in terms of normality, the actual amount of acid represented by a certain p_H is best appreciated if its relation to the normality of a solution is defined. For example, a tenth normal hydrochloric acid has a p_H of 1, and a hundredth normal (N/100) has a p_H of 2, a thousandth normal a p_H of 3, etc. These numerals, 1, 2 and 3, really represent the logarithms, respectively, of 10, 100 and 1,000, using the system of logarithms having a base of 10. Under this system, the logarithm of 10 is made to equal 1; hence the logarithm of anything under 10 would be a minus quantity, which is not always convenient. To obviate working with minus quantities, when computing the logarithm of a tenth normal solution, for example, the logarithm of the denominator, 10, is taken. In other words, the reciprocal (which is 1 divided by the number) is employed; and it is for this reason that the p_H is defined as the logarithm of the reciprocal of the hydrogen ion concentration—a rather disconcerting phrase to the average reader of medical literature. For this reason, also, it must be kept in mind that a p_H of 1 represents a stronger hydrogen ion concentration than a p_H of 2. In other words, the acidity decreases as the numerical value of the p_H increases.

We will now return to the subject of buffering solutions for injection. As already stated, we noticed the spontaneous degeneration of so many samples of dry indicator dyes that we decided to study their p_H, since their chemistry makes phenol (carbolic acid) a likely impurity.

For buffering phenolsulphonephthalein, phosphates, carbonates and sodium chlorids are employed. The result is a physiologic standard solution of the phenolsulphonephthalein having a p_H of 7.2. For a 0.6 per cent. solution of the monosodium salt of phenolsulphonephthalein, we use 6 gm. per liter, which represents 0.016 molar, its molecular weight being 376.164. One gram per liter of sodium bicarbonate is used. Its molecular weight being 84.008, such a solution is 0.0119 molar. Of disodium hydrogen phosphate, whose molecular weight is 142.05, 0.6 gm. per liter is used, giving a 0.0042 molar solution.

The molecular weight of the pure phenolsulphonephthalein is 353; of the monosodium salt, 376. Employing 6 gm. per liter of the salt is equivalent to 5.633 gm. of the pure dye, which will require 16 c.c. of normal sodium hydroxid to yield the monosodium salt.

An equivalent quantity of sodium chlorid is added, considering 0.85 per cent as physiologic. In terms of the molecular weight of sodium chlorid, the equivalent quantity of 0.0119 molar sodium bicarbonate (as above employed) is 0.696, and of disodium acid phosphate, 0.246 and of phenolsulphonephthalein, 0.936. The total, 1.88, subtracted from 8.5 sodium chlorid per liter, leaves 6.62 gm. of sodium chlorid. A mixture of these four salts and alkali in 1 liter of distilled water completes the process.

Less complicated is the employment for this purpose of what is practically the Ringer-Tyrode mixture: sodium chlorid, 0.8 per cent.; potassium chlorid, 0.02 per cent.; anhydrous calcium chlorid, 0.02 per cent.; anhydrous magnesium chlorid, 0.01 per cent.;

6. Prideaux, E. B. R.: The Theory and Use of Indicators, New York, D. Van Nostrand Company, 1917, Chapter V.
7. Mellon, Acree, Avery and Slagle, Footnote 2, second reference.

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anhydrous sodium dihydrogen phosphate, 0.005 per cent., and sodium bicarbonate, 0.1 per cent. The p_H of this mixture depends on the purity of the materials. Our solutions gave from 8.1 to 8.4. This can readily be adjusted to 7.5 by the addition of a small amount of potassium or sodium dihydrogen phosphate.

The physiologic value of the Ringer solutions or its modification lies in the antagonistic action of the calcium and magnesium ions on the sodium which, taken alone, is well known to be toxic for certain living protoplasm. When combined with calcium or magnesium, or both, a sodium chlorid solution is said to be physiologically "balanced." Such solutions are not really buffered, but are "adjusted" and, because they contain bicarbonate, are unstable. Owing to the increased carbon dioxid tension of bicarbonate over the carbon dioxid tension of the air, the bicarbonate of such solutions on exposure to the air undergoes a change to carbonate, with a corresponding increase of alkalinity. We have found also a pure sodium bicarbonate solution having a p_H of 7.64 will, after ten minutes' aeration with hydrogen, have a p_H of 8.82. Furthermore, the Ringer-Tyrode and Locke solutions cannot readily be sterilized by heating, owing to the precipitation of calcium and perhaps magnesium salts. Such considerations are disadvantageous to the employment of these solutions practically, although it must be admitted that the p_H changes taking place in them are not of wide range.

The only other alternative at present is to buffer the sodium chlorid in a manner that disturbs the physiologic "balance" as little as possible. Virtually all of the market samples of sodium chlorid, even the chemically pure product, have a p_H well under 7, and it is often as low as 5. As mentioned above, our distilled water is similar. It has been found that a sodium chlorid solution of p_H 7.4 can readily be prepared by employing the following mixture: sodium chlorid, 80 parts; dipotassium hydrogen phosphate, 12 parts; potassium dihydrogen phosphate, 2.7 parts. It is obvious that there is still room for improvement in the preparation of a theoretically ideal saline solution for injection.

In this connection, it is worth noting that Bayliss,[8] in discussing surgical shock, has advocated the incorporation of a colloid of the same viscosity as the blood, preferring gum. He goes so far as to deprecate the use of salts alone in shock, noting that the rise in blood pressure is not permanent. Such observations serve to emphasize the complexity of factors involved, and for this reason we are content to await the practical results of these procedures. It is only fair, however, to state that during the year or so in which they have been employed clinically in this hospital, a distinct impression of their benefit has been created among the clinicians.

If such procedures finally justify their clinical adoption in hospitals, a word of caution even at this time may be in order. It is probable that many substances cannot be buffered satisfactorily, owing broadly to the fact that their therapeutic properties may function only at a certain p_H. For example, we found that arsphenamin could not be buffered below about 10. With this drug there are two molecules of hydrochloric acid to be neutralized, as well as two hydroxyl groups from which the disodium salt must be formed. It is well known that the incompletely neutralized product is very toxic, and for that reason a slight excess of alkali is recommended, making the process a crude one.

8. Bayliss, W. M.: Intravenous Injections to Replace Blood, Great Britain Medical Research Committee, Special Investigation Concerning Surgical Shock, No. 1, London, 1917.

CONCLUSION

We wish to make it clear that the purpose of this paper is to bring clearly into view the scientific reasons for buffering injection fluids, and the possibility that untoward reactions may thus be diminished in number, in severity, or in both. We do not wish, however, to be understood as having reached any final conclusion on the subject. An evaluation can be reached only when such solutions are thoroughly tested clinically and experimentally. However, the clinical impressions have been so favorable to date that there seems to be justification for this presentation as a companion paper to the one by Williams and Swett, dealing with the clinical applications of these laboratory developments, which some time ago were turned over to the internal medicine department.

SYPHILIS AND TRAUMA

THE WORKMEN'S COMPENSATION ACT, THE INDUSTRIAL PHYSICIAN AND THE SYPHILITIC EMPLOYEE *

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PHILADELPHIA

A latent syphilitic infection may in some cases play an important rôle as a factor in the immediate and late consequences of trauma. Although the relation of trauma to syphilitic lesions has long been recognized, recent laws governing workmen's compensation has made this of considerable importance. Injuries by syphilitic soldiers during the recent war brought up important questions regarding pension, retirement and compensation for such individuals.

The relationship is of particular importance to physicians engaged in industrial medicine. However, he alone does not share in its interest. The surgeon is cognizant of syphilis as a factor in the nonhealing of wounds, the nonunion of fractures. The ophthalmologist has observed interstitial keratitis appearing after trauma incident to a foreign body in the cornea of a syphilitic. The laryngologist is reluctant to perform a septum operation on a syphilitic. The internist is aware of the rôle that trauma plays in the cause of aneurysm. The psychiatrist realizes that it is not syphilis alone that causes paresis, but syphilis plus something else. Head trauma can be ascribed as a determining factor in the production of paresis in a certain number of syphilitics. In short, trauma in a syphilitic may determine the site of syphilitic lesions in almost all organs of the body.

The relation of trauma to the development of syphilitic lesions can be considered from two views—the medicinal and the medicolegal. The medical aspect will first be considered, and then the medicolegal.

The influence that trauma exerts in the localization of syphilitic lesions is not confined to this disease.

* Read before the Section on Industrial Medicine and Public Health, College of Physicians of Philadelphia, Feb. 24, 1922.

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Trauma may determine the site of tuberculous lesions, particularly of the bones and joints. Some dermatoses, for instance, psoriasis, have a predilection for such regions as are exposed to mechanical irritation and pressure; in patients with psoriasis or lichen planus or xanthoma tuberosum, new lesions may appear on places that had been subjected to some irritation. Indeed, Kaposi has expressed it as almost a law governing some skin affections that the skin reacts against irritants with a sort of specific energy in the sense of the original disease. The study of syphilis offers many occasions for just such observations.

Cazenave,[1] in 1843, was perhaps the first to point out the relationship between syphilis and trauma. Ricord mentions it in his lessons on the chancre, as do many of the older writers. The relationship is frequently seen by the dermatologist in the frequency of mucous patches and of syphilitic glossitis in excessive smokers; in condylomas resulting from irritation of secretions and excretions; in the squamous syphilids of the palms in those engaged in laborious occupations; in syphilitic lesions developing after tatooing, and in the observation that a gumma, as seen cutaneously, not infrequently appears at the site of previous trauma. Consistent with the latter statement are the interesting observations of Lacapère and Laurent,[2] who record the frequency of gumma of the frontal bone in Mohammedans, who during religious worship frequently strike and rest their foreheads for long periods on the marble floor in the mosque. An instance of a cutaneous gumma of the forehead which appeared after this area was traumatized is shown in Figure 1.

In 1877, Tarnowsky,[3] starting from the well-established fact that syphilitic manifestations are likely to appear after some traumatism and after a series of experiments, improvised a cutaneous test for the diagnosis of latent syphilis. This test consisted of an application to the skin of a caustic paste, and involved the characteristic manner in which syphilitic tissue reacted to its presence. A positive result was called "cauterisatio provocatoria." This test was found to be unreliable, but it is interesting to contrast it with the modern cutaneous test for the diagnosis of syphilis, namely, the luetin reaction. Although the luetin reaction has for its basis the phenomenon allergy, yet it is a singular fact that the control inoculations consisting of culture mediums without *Spirochaeta pallida* frequently react positively, which is in line with the cauterisatio provocatoria of Tarnowsky, and doubtless manifests the influence that trauma exerts on syphilized tissue.

POSSIBLE RESULTS OF TRAUMATIZING SYPHILIZED TISSUE, AS SEEN CLINICALLY

When syphilitic tissue is subjected to trauma inflicted in various ways, including that resulting from a surgical operation, healing of the wound may be delayed; in this event, antisyphilitic treatment facilitates or causes healing to take place. The wound may gradually assume the appearance which is characteristic of the different forms of tertiary syphilitic lesions; such an instance is recorded in Case 1, in which a man sustained an extensive laceration of the leg, one part of which involved the scar of a healed syphilid. The wound healed uneventfully, except the portion involving the scar. This portion gradually assumed the appearance of an ulcerating gumma (Fig. 2 *A*), which aroused the suspicion of syphilis. The Wassermann test then made was four plus. The administration of antisyphilitic treatment resulted in complete healing of the wound (Fig. 2 *B*).

Case 1.—*Gummatous ulceration, developing at site of laceration, involving scar of a healed syphilid.* P., a man, aged 26, single, had had a chancre about six years before, at which time treatment consisted only of mercury pills taken for a short time. About two years before I saw him, an ulceration appeared on two different areas of the left leg. The Wassermann test at this time was positive, and he received a few injections of arsphenamin, which healed the ulceration. Since that time no further treatment was received and he remained in good health.

Recently, the patient was thrown from a motorcycle, sustaining an extensive laceration of the left leg, part of which involved scars of the former syphilid. The wound healed uneventfully except for the portion involving the scars; this part gradually assumed the appearance of a gummatous ulceration. The edges were sharply defined, slightly raised and thickened. The inner portion was perpendicular. The floor had suppurated, and dirty gray. The ulceration was of a low grade inflammation. Figure 2 *A* shows the ulceration as it appeared about three months after the accident. The wound at this time greatly resembled a gummatous ulceration. For this reason a Wassermann test was made, which was four plus.

Arsphenamin was then administered, which resulted in a complete healing of the ulceration. Figure 2 *B* shows the ulceration after five intravenous injections of arsphenamin.

After healing has taken place, a syphilid may develop in the scar. In Muller's[4] case a large node, a gumma, developed in the healed abdominal incision. In Coues'[5] case the wound separated after the stitches were removed, and later took on the appearance of an ulcerating gumma.

The influence of repeated and long continued trauma is seen in Case 2 (Fig. 3). This man drove a wagon, the brake of which constantly knocked against his arm. At this site, a gumma appeared. After this lesion was healed, another similar lesion developed at the site of pressure resulting from resting his arm on the frame of the wagon seat.

Case 2.—*Cutaneous gumma developing at site of repeated and long continued trauma.* C. C., a negro man, aged 28, had had a chancre, for which he took medicine by mouth for a brief period. He had been a driver for the last twelve years. Almost daily for a number of years the releasing of the brake of the wagon would knock against the lower inner aspect of the right arm. Three years before I saw him, an ulceration developed at this site. At this time the Wassermann reaction was four plus. After four or five intravenous injections of arsphenamin the ulceration was entirely cured. Subsequent to this he changed his place of employment and had driven in a different wagon. The frame of the seat of this wagon was so arranged that the inner part of the right arm rested on it above the scar of the former ulceration. At this point of pressure a gumma recently developed. On the internal lower aspect of the right arm below the biceps and above the elbow there was a scar presenting the features of one resulting from a syphilid. Above this area there was an oval indurated mass—a gumma (Fig. 3). Clinical examination otherwise was negative. The Wassermann test was four plus. After arsphenamin administration, the tumor disappeared.

A chancre redux—virtually a gumma—is doubtless an expression of the influence that trauma exerts on syphilized tissue.

1. Cazenave: Traité des syphilides, Paris, 1843.
2. Lacapère and Laurent: Influence du traumatisme sur les localisations de la syphilis, Paris méd. 8:94 (Feb. 2) 1918.
3. Tarnowsky, B.: Syphilis und Reizung, Vtljahr. f. Dermat. u. Syph. 4:19-42, 1877.
4. Muller, G. P.: Personal communication to the author.
5. Coues, W. P.: Syphilis and Trauma, Interstate M. J. 23:603-615 (Aug.) 1916.

The literature emanating from military experiences during the recent war contains many reports in which injuries sustained by persons with syphilis were a determining factor in the production of syphilitic lesions. Particular mention may be made of the article of Gougerot and Clara,[6] who report divers tertiary lesions developing in the skin, muscles and bones at the site of wounds and contusions inflicted during warfare. In one of their cases a soldier sustained a compound fracture of the femur. The wound, twenty-three months after the injury, was unhealed, at which time it assumed the appearance of an ulcerating gumma. Antisyphilitic treatment was then administered, which healed the wound in eighteen days. In most of their cases, syphilitic manifestations appeared within a short time of trauma, and in all cases antisyphilitic treatment promptly healed the wound which previously had resisted all surgical and medical treatment to bring about healing.

Not only may syphilitic manifestations develop in the skin and muscles when these are subjected to trauma, as is shown in the foregoing reports, but other organs—the osseous system, viscera and nervous system—as will later be shown, may similarly react after the infliction of trauma.

In the exhaustive report of Stolper,[7] cases are cited which clearly show the rôle that trauma may play in the causation of visceral syphilitic lesions. Ramond and Postina[8] report the case of a soldier, aged 28, who after experiencing front line service for three years was thrown some distance by the explosion of a shell. He sustained contusions of the chest and abdomen. Soon after he developed symptoms of cardiac decompensation, and clinical evidences of an aortic aneurysm were discovered. The patient died, and necropsy revealed an aortic aneurysm.

Fig. 1.—Nodular syphilid appearing after trauma: The patient, while walking in the dark, knocked her forehead against a door; the forehead was severely contused; the lesion appeared one month later; the patient was unaware of a syphilitic infection and was untreated; the Wassermann test was four plus.

The development of gumma of the testicle after trauma to this organ is reported in Case 3.

CASE 3.—*Gumma of testicle developing after trauma.* H. M. L., a man, aged 21, single, denied having been exposed to venereal infection. His father and mother, who were killed in a railroad accident, were in good health prior to the accident. One sister was living and in good health. The family history was otherwise negative. The patient had always enjoyed good health until the onset of the present trouble. About one month before I saw him he fell, injuring the testicles, since which time there had been considerable pain and swelling. The patient thought that for the last two years the right side of the scrotum had been slightly larger than the left; but pain had been absent. The right testicle was enlarged, nodular, indurated and tender. The epididymis and vas deferens were normal to the touch. The prostate and seminal vesicles were normal to palpation. In a mistaken diagnosis the right testicle was removed. Grossly the testicle was moderately and irregularly enlarged and firm in consistency. Small nodes were scattered throughout the organ. The histologic examination disclosed a picture characteristic of gumma. The Wassermann reaction was subsequently reported as positive, four plus.

SYPHILIS AS A FACTOR IN DELAYED UNION AND NONUNION OF FRACTURES; QUESTION OF FRAGILITY OF BONES IN SYPHILIS

Among the general causes of delayed and nonunion of fractures, syphilis is a factor in preventing normal union.

The susceptibility of bone marrow to spirochetal invasion has been demonstrated in experimental syphilology. Clinically, we know that syphilis not uncommonly involves the osseous system, particularly in hereditary syphilis. This involvement frequently exists without producing any symptoms. The truthfulness of this is manifested in the procedure of roentgenographing the skeleton for diagnostic evidence of latent syphilis. These considerations are consistent with the baneful influence that syphilis may exert on the reparative processes after fracture.

In Estes'[9] analysis of the causes of delayed union in fractures of the long bones, sixty-four cases were studied. Of this number, three cases of compound, comminuted fracture of the tibia were found to be syphilitic. No manifestations of the disease were apparent, and infection was not definitely admitted, but the Wassermann test, taken on suspicion, was four plus. Specific treatment seemed in two cases to hasten definitely the bony union.

There are many fractures of the bones sustained by syphilitic patients which unite uneventfully. On the other hand, convincing cases have been reported to show that in some instances syphilis has had a great effect in the delayed union and nonunion of fractures. Gellé[10] reports a number of such cases. In one, a man, aged 30, experienced an oblique fracture of the tibia. There was no evidence of union at the end of seven months, at which time there were symptoms of tertiary syphilis. Antisyphilitic treatment was administered. At the end of one month, union had occurred. In another case, a man, aged 25, with secondary syphilis, sustained a fracture of the tibia, which failed to unite after appropriate treatment for fifty-five days. Antisyphilitic treatment was administered for fourteen days, at which time there was evidence of beginning union. The treatment was purposely discontinued. Gellé states that, for the next fifteen days, careful observation showed no more progress toward union. Mercurial treatment was again resumed, which resulted in complete union during the following three weeks.

In all cases of fractures with long delayed or fibrous union, the patient should be examined for syphilis. The examination should include not only a Wassermann test but a roentgenographic study of other bones of the body. Such patients, if syphilitic, are usually in the tertiary period of the disease, presenting no obvious manifestation of the infection.

6. Gougerot and Clara: Syphilis post traumatiques, J. med. franç. 7: 216-218, 1918.

7. Stolper, Paul: Ueber die Beziehungen zwischen Syphilis und Trauma, insbesondere in gerichtlich- und versicherungsrechtlich-medicinischer Hensicht, Deutsch. Ztschr. f. Chir. 65: 118-198, 1902 (review of literature).

8. Ramond, F., and Postina, L.: Anevrysme et insuffisance aortiques traumatiques chez un syphilitique, Bull. et mém. Soc. méd. d. Hôp. de Paris, February, 1918, p. 132.

9. Estes, W. L.: A Study of the Causes of Delayed Union and Non-Union in Fractures of the Long Bones, Ann. Surg. 71: 40-47 (Jan.) 1920.

10. Gellé, L.: Sur les fractures chez les syphilitiques, Thèse de Paris, No. 328, pp. 1-130, 1884 (review of literature).

Syphilis may at times cause fragility of the bones which predisposes them to fracture. Charpy [11] points out that spontaneous fractures in syphilitics can be attributed to two causes: (1) a local syphilitic lesion, simple osteitis, or gummatous lesion which, rarifying the bony structure, diminishes its resistance, and (2) a general lesion involving the whole skeleton, but not to the extent that any one bone appears outwardly changed.

Charpy made certain experiments in regard to the question of the fragility of bones in tertiary syphilis. The fibula from a person, aged 61, fractured at 200 kg. (441 pounds) pressure. In another experiment, a grossly normal fibula from a syphilitic patient was fractured with 175 kg. (385 pounds) of pressure. Subsequent examination of the medulla of this bone revealed no pathologic condition. Fibulae from nonsyphilitic patients were again tested, and were found to fracture at 300 kg. (661 pounds) pressure. From these experiments Charpy estimated a reduction of 50 per cent. in the solidity of the skeleton of patients with tertiary syphilis.

Fractures occurring spontaneously or after an insignificant trauma have been reported. Space forbids a citation of such cases, reported notably by Vernot,[12] Fulda [13] and Meriel.[14]

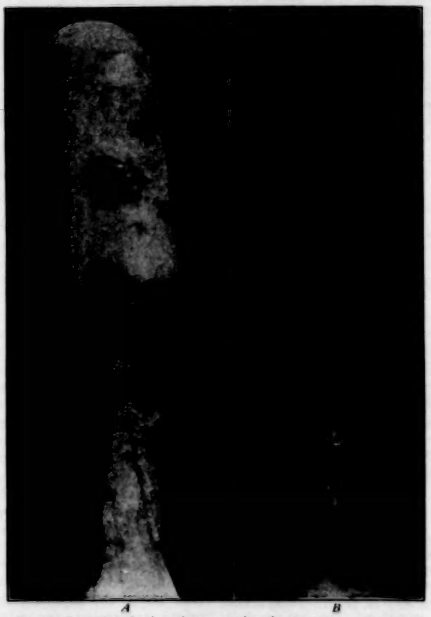
In many cases gummatous bursitis or syphilitic bursopathy of Verneuil, traumatism is an important exiting cause. Indeed, the bursae involved in this condition are those mostly exposed to trauma.

RESULTS OF TRAUMATIZING SYPHILITIC RABBITS [15]

In this study, in an endeavor to produce syphilitic lesions at the site of trauma, twenty-five syphilitic rabbits were utilized. All of these rabbits were successfully inoculated intratesticularly. In none was generalized syphilis produced. The age of the infection varied from a few weeks to ten months. Some were in the acute phase of an intratesticular inoculation with *Spirochaeta pallida*. The scrotum was considerably enlarged and edematous; the testes were likewise enlarged and nodular. The fluid obtained from an intratesticular puncture contained many motile spirochetes. Other rabbits were in the latent or quiescent phase; the organs were normal in size, and one or two small nodes were present, the aspirated fluid from which contained a few nonmotile spirochetes.

The following methods of inflicting trauma was carried out on one or more rabbits. The experiments were conducted under local or general anesthesia.

An incision about 3 inches (7.5 cm.) in length was made through the skin of the back; the incision was sutured. Over a small area, the skin was pinched with a hemostat and pricked with a scalpel; this was done in a number of places in the same area. The foregoing trauma was inflicted at variable intervals, but always at the same place, every day for a week with a week intervening, or at weekly intervals. The total duration of this traumatization extended over a period of from three to five months.



A *B*

Fig. 2 (Case 1).—*A*, ulceration presenting the appearance of a gumma appearing at the site of a laceration involving the scar of a former syphilid; the wound gradually assumed the appearance shown here, about three months after the original laceration sustained in an accident. *B*, ulceration almost healed after five intravenous injections of arsphenamin.

In other rabbits the cornea was scratched sufficiently deep to involve Descemet's membrane. In others the anterior chamber was punctured with a small needle, the aqueous fluid evacuated, and the iris pricked with the needle. This procedure was not repeated; the former procedure, however, was repeated at varying intervals.

The results of these experiments were entirely negative. After the completion of all traumatization experiments, the wound healed uneventfully and no untoward reaction developed.

Consistent with these negative results is the fact that we have never observed a syphilitic lesion develop at the site of incision made through the scrotum in removing the syphilized testicle for transplanting into other rabbits, in conducting studies on experimental syphilis in rabbits.

POSSIBLE EXPLANATION OF APPEARANCE OF SYPHILITIC LESIONS AT A PREVIOUSLY TRAUMATIZED AREA

It is not definitely known why syphilitic lesions are likely to appear at the site of trauma. The following considerations may serve to explain this phenomenon. The infliction of trauma may produce a locus minoris resistentiae and serve to activate dormant spirochetes. This view is sustained by the following observations. Warthin has demonstrated the spirochete in many organs of latent syphilitics coming to necropsy. *Spirochaeta pallida* has been found in atrophic and pigmentary remains of syphilids, long after their

11. Charpy, M.: De la fragilité des os chez les syphilitiques, Ann. de dermat. et de syph. **6**: 269-272, 1885.
12. Vernot: Tr. M. Soc. Dept. of Indre and Somme, p. 39, 1846.
13. Fulda: Centralbl. f. Chir. **37**: 691, 1887.
14. Meriel, T.: Bull. et mém. Soc. anat. de Paris, June, 1901, p. 417.
15. Attempts were made to traumatize the nervous system of rabbits, but the means improvised were found unsatisfactory and the attempt was abandoned.

involution. These organisms may be found in the scar of chancre long after the sore has healed. Neisser found spirochetes in the skin of syphilitic patients in which there was no local tissue reaction.

Before the spirochete had been discovered, Neumann[16] recorded the persistance of perivascular cell infiltration of the papillary blood vessels long after the disappearance of syphilitic papules.[17]

Spirochetes from the blood may be deposited at the site traumatized. Although it is exceptional for these organisms to be recovered from the blood of patients with tertiary syphilis, cases have been reported in which the organisms were demonstrated in such instances. Uhlenhuth and Mulzer[18] report such findings.

The phenomenon allergy, or the hypersensitive state of syphilized tissue, doubtless plays a rôle in the influence that trauma exerts in causing syphilitic lesions. Neisser employed the term *Umstimmung* to designate the pathologic state of the skin in chronic syphilitic patients, to which phenomenon he attributed the appearance of a positive reaction at the site of the control employed in the luetin reaction.

Because of the allergic state of syphilized tissue, it is perhaps possible that trauma, a nonspecific irritant, acts as a stimulant to this tissue, causing it to react in a characteristic manner in the absence of the specific irritant, namely, *Spirochaeta pallida*.

Osnato,[19] after reviewing our knowledge regarding the pathologic effect of trauma on the cerebrum, comes to the conclusion that:

There are undoubted acute and chronic pathological lesions of the brain ascribed to trauma of the head with or without injury to the vault or base of the skull. The early results of injury are due to hemorrhage and laceration or destruction and edema of brain tissue; the later results are due to gliosis and sclerosis of nerve cells. The latter pathological changes produce the so-called traumatic insanity. The earlier symptoms produce focal paralytic lesions or simple concussion. It appears from the evidence submitted that the cerebral symptoms of the paretic type develop when something happens to change the permeability of the blood vessels of the brain, thus allowing the spirochetes and their toxins access to brain tissue. Trauma of the brain may, therefore, by causing vascular injury or brain destruction, be followed later by gliosis and nerve cell sclerosis, allowing first the spirochetal invasion, and later adding to the gliosis and sclerosis of nerve cells which are also an integral part of the paretic brain pathology.

Fig. 3 (Case 2.—Gumma above scar of syphilid.

PROVOCATIVE INFLUENCE OF TRAUMA ON THE WASSERMANN TEST

Since trauma may activate a latent syphilitic infection and determine the site of a syphilitic lesion, there is reason to suppose, *a priori*, that the same may occur in the Wassermann test.[20] My attention has been called to such a phenomenon by Dr. P. S. Pelouze of Philadelphia, to whom I am indebted for the histories of Cases 4 and 5, which show how previous negative Wassermann tests, in known syphilitics, became positive (four plus) after these patients sustained trauma inflicted in one way or another.

CASE 4.—W. E., a man, aged 29, had a chancre of the lip. In May, 1918, the Wassermann test was four plus. During the following year he received twenty-four injections of neoarsphenamin and twenty-four mercurial rubs. During this time three negative Wassermann tests were obtained, and the test was again negative in October, 1919. The following month he experienced an infection of the leg which confined him to bed and which necessitated a minor surgical operation. In February, 1920, the Wassermann test was four plus; repeated later, it was again four plus.

CASE 5.—L. K., a man, aged 33, had a chancre in August, 1919. The Wassermann test was four plus. Arsphenamin and mercury were administered at intervals until November, 1919, at which time the test was negative and was again negative in January, 1920. In February he was shot in the arm; the bullet was extracted and tetanus antitoxin, 1,500 units, was administered. Two weeks after this injury the test yielded a four plus reaction.

THE WORKMEN'S COMPENSATION ACT AND THE SYPHILITIC PATIENT

The burden of proof rests upon a claimant for compensation made under the workmen's compensation act to show, by competent testimony, not only the fact of the injury, but also that it arose out of and in the course of the employment of the claimant,[21] and such proof must be based on something more than a mere guess, conjecture or surmise.

16. Neumann, I.: Neuere Untersuchungen über die histologischen Veränderungen der Hautsyphilide, deren Verlauf und über das induirte Dorsallymphgefass, Viljahr. Dermat. u. Syph. **2**: 209-240, 1885.

17. These observations, which were confirmed by Hjelmman (Arch. f. Dermat. u. Syph. **45**: 37, 1898) lend a strong support to Hutchinson's doctrine that residues of the early period of syphilis form the starting point of later lesions.

18. Uhlenhuth, P., and Mulzer, P.: Weitere Mittheilungen über die Infectiosität des Blutes und anderer Körperflussigkeiten syphilitischer Menschen für das Kaninchen, Berl. klin. Wchnschr. **1**: 769, 1913.

19. Osnato, Michael: Trauma and Other Nonluetic Influences in Paresis, J. Nerv. & Ment. Dis. **52**: 112-133 (Aug.) 1920.

20. In the explanation of a traumatic provocative Wassermann test, the following consideration should be borne in mind. The Wassermann test in the light of present knowledge may be defined as a reaction of a physiochemical nature in which there occurs a precipitation of the globulin of the syphilitic serum by the lipoidal colloids of the antigen, with absorption of the complement by this precipitate. We do not definitely know whether this test fluctuates from day to day or week to week, although there is evidence that it does fluctuate in the absence of treatment over longer periods of time. Is this fluctuation dependent on the absence or presence of spirochetal activity, or on some metabolic change which directly influences the test? We know that an acute infectious disease may provoke a positive Wassermann reaction in a syphilitic patient; yet it is not known whether this is due to stimulation of the dormant spirochetes or through a direct influence on the test. It will be noted that, in Case 8, tetanus antitoxin was administered. This injection, a foreign protein, may have been a direct factor in changing the test. There are perhaps other factors beside spirochetal activity which, by an interplay of metabolic changes, directly influence the complex underlying basis of the Wassermann test: for example, reports obtaining negative Wassermann tests in syphilitics by the injection of milk. According to M. L. Menten (Am. J. Obst. **78**: 514 [Oct.] 1918), the blood of pregnant women giving an antepartum positive Wassermann reaction, in the absence of treatment, frequently gives a negative reaction when the postpartum blood is examined.

21. This part of the workman's compensation is variably phrased in different states. In some states the injury should "arise out of and in the course of employment"; in other states the injury should originate in the "course of employment," and in a few states the injury should originate "of employment."

When a workman dies from a preexisting disease, if the disease is aggravated or accelerated under certain circumstances which can be said to be accidental, his death results from injury by accident.

VERDICTS RENDERED IN INJURIES SUSTAINED BY SYPHILITIC WORKMEN

Case 6.—*Aneurysm developing suddenly after violent physical effort in the course of employment.* In this case, *Haskell and Barker Car Co.* v. *Brown*, Ind. App. 117 N. F. 555 (1917), the decedent was in the defendant's employ unloading steel sheets from cars by means of a derrick which was attached to the sheets through a chain and hook. The work required considerable physical effort. When the decedent was at work he was seen by another employee to stagger and to hold his hand to his throat as if he was choking. On later examination a physician found him suffering from an aneurysm.

In affirming an award in favor of the applicants, the court held that the word accident as appearing in the compensation acts was to be used in its popular sense, and meant any unlooked for mishap or untoward event, not expected or designed. The court held, further, that these accidents "arose out of" the decedent's employ, as he was doing that which was expected of him at a time and place required by such duties.

Case 7.—*Disease condition (syphilis) retarding recovery.* In *Hills* v. *Oval Wood Dish Co.*, 191 Mich. 411, 158 N. W. 214 (1916), it appeared that an employee's arm was injured with extensive lacerations. An award for compensation was made and affirmed by the board. At the expiration of the period for which compensation was agreed on, the defendant sought to be relieved from further payments on the ground that the disability due to the injury had ceased and that such disability as continued was the result of syphilis.

Fig. 4.—Ulceration on a patient with neurosyphilis, developing after many lumbar punctures performed in the course of intraspinal therapy. It greatly resembled a gummatous ulceration; the ulceration was of a low grade inflammation and presented a "punched" out appearance. The Wassermann test at the time of its development was four plus. Healing was protracted. Arsphenamin intravenously, and in addition local treatment of the ulceration, was used to bring about healing.

In affirming the determination of the board in refusing to relieve the defendant from further payment of compensation, the court said:

> Assuming that such disability is being prolonged by the disease, there is yet no point at which the consequences of the injury cease to operate. It is the theory of respondents, not that the consequences of the injury cease, but that they are prolonged and extended. There is no part of the disability that would have happened, or would have continued, except for the injury extended through the entire period, and so long as the incapacity of the employee for work results from the injury, it comes within the statute, even when prolonged by preexisting disease.

Case 8.—*Compensation award for paresis following injury to head* (in re: *Crowley*, 223 Mass. 288, 111 N. E. 786, 1916).

In affirming a decree confirming an award of compensation, the court said:

> The material evidence before the committee on arbitration warranted the findings that the employee had a preexisting, constitutional disease known as syphilis, which, being dormant, left his ability to perform the arduous work for which he was hired unimparied, and that because of the nature of the accident arising out of and in the course of employment, his nervous system suffered a shock sufficiently severe to aggravate and accelerate his condition, until general paresis or insanity resulted, depriving him of all capacity for work in the future. The statute prescribes no standard of fitness to which the employee must conform, and compensation is not based on any implied warranty of perfect health, or immunity from latent and unknown tendencies to disease, which may develop into positive ailments, if incited to activity through any cause originating in the performance of the work for which he is hired.
>
> What the legislature might have said is one thing, what it has said is quite another thing, and in the application of the statute the course of partial or total incapacity may spring from and be attributed to the injury just as much where undeveloped and dangerous physical conditions are set in motion producing such results, as where it follows directly from dislocation, or dismemberments, or from internal organic changes capable of being exactly located.

POST-TRAUMATIC PARESIS

Much has been written, particularly by the older writers, concerning the influence of head injuries in the development of paresis. One sees occasionally cases of paresis in adults, the symptoms of which definitely followed trauma. There is no doubt that trauma can be ascribed as a precipitating cause of paresis. It therefore becomes a matter of considerable importance in connection with the liability of employees to decide how far an injury to the head may be the cause of general paresis.

Mott[22] estimates that 10 per cent. of cases of paresis admitted to the asylums have a history of head injury. However, in many cases of paresis apparently following trauma the disease in all likelihood started before the injury.

The industrial physician should realize that trauma not only is a precipitating cause of paresis, but may exacerbate it and may also precipitate a relapse. This is of particular importance, since the early symptoms of paresis may be insidious and may for some time remain undetected. In this way false claims for compensation may arise.

A case is recorded by Mott in which a patient at one of the London county asylums died of general paralysis; his wife claimed damages from the railway company in whose service her husband had been many years a guard. It appeared that the man himself had not felt fit for his work, and stated that in shunting the train he had received an injury to his head; it was

22. Mott, F. W.: Syphilis of the Nervous System, System of Syphilis, Power, D'Arcy and Murphy, Ed. 2, London 4: 240, 1914.

possible that he had had a seizure and fallen. He was seen by the medical officer of the company, who gave it as his opinion that there was nothing organically wrong with him and that he was fit for work. Subsequent inquiries from fellow officials disclosed that for some time before the accident this man had been strange in his manner and not like himself.

In connection with the Workmen's Compensation Act and the liability of the employer, other precipitating causes of paresis which may arise out of and in the course of employment become a matter of importance.

To determine some of the precipitating causes of paresis, I analyzed sixty-one cases of paresis among the admissions to the Boston Psychopathic Hospital. Of the sixty-one cases, no precipitating cause could be determined in thirty-seven. In three cases, symptoms followed a very recent trauma. Two of these cases are here reported:

CASE 9.—*Symptoms of paresis following severe head injury.* H. L., a man, aged 36, was not sufficiently oriented to give a history. For this reason it was not determined whether or not he had had previous syphilitic treatment. His wife started that they had been married seven years; she had never been pregnant. The patient was apparently well; no mental symptoms whatever were noted until after an accident which occurred in December, 1918. While he was engaged in his work, a heavy iron tray fell on his head. He was unconscious for about four hours. Since this accident until the time he was admitted, April, 1919, he had been incapacitated. In this interval he complained of dizzy spells and pain in his head, and he felt "all in." He had difficulty in sleeping, and his wife noticed that at times he was confused and talked strangely. Finally, his speech became impaired. As a result of wandering away from home in his underclothes, he was admitted to the Boston Psychopathic Hospital, at which place he came under my observation.

On admission, he was disoriented in all phases, confused and incoherent. There was marked memory defect for recent and remote events. He was euphoric, lacked insight, fabricated, and was suggestible. Ideation and cerebration were decreased. The general physical examination was essentially negative. The pupils were unequal and irregular; the right pupil reacted sluggishly to light; the left pupil did not react to light. All the deep reflexes were exaggerated. There was no ankle clonus or ataxia. Speech defect and tremor of the tongue were marked. The blood Wassermann reaction was four plus. Examination of the spinal fluid was positive for globulin; the colloidal gold test was 5555541000; the Wassermann test was four plus with 1, 0.8, 0.6, 0.4 and 0.3, c.c.

CASE 10.—*Symptoms of paresis appearing immediately after an accident.* J. H., a man, aged 41, married, was infected twenty years before admission to the hospital, and was treated by a druggist; he received no further treatment. He was a driver of a motor truck. April 17, 1917, while driving his truck in a narrow street and about to pass another vehicle, an iron beam projecting from the truck he was driving struck a telegraph pole. The impact swerved the machine, throwing his helper, who was seated with the patient, to the street. The patient retained his seat, but it appears that he was jolted and thrown against the frame of the seat. However, he was able to drive the truck to his home. When he entered the house, his wife said that he looked strange and white. The only response to her questions were "Here, here." This he repeated many times. After sitting down to supper he put his hands in the soup. He left the table without eating, left the house and drove his truck to the garage. His wife, not knowing what had happened, thought her husband was drunk. He was brought home from the garage by a friend; after entering the house he did not recognize his mother. A physician failed to find any evidence of bodily injury. That night he slept but little. The following day he was "dazed," and talked incoherently. April 20, three days after the accident, he was admitted to the Boston Psychopathic Hospital. The patient's wife stated that, prior to the accident, he worked every day and that he acted normal in every way.

On admission, he was oriented. Speech and memory defect were present. He was euphoric, but delusions were not present. There was tremor of the tongue and lips. The pupils were unequal and irregular, and did not react to light. All the deep reflexes were exaggerated. The blood Wassermann reaction was four plus. Examination of the spinal fluid revealed 26 lymphocytes per cubic millimeter; globulin was positive; the colloidal gold test was 5554443321. The Wassermann test was four plus with 1, 0.7, 0.5, 0.3 and 0.1 c.c.

Dr. Harry C. Solomon states that since May, 1917, the patient has received ninety injections of arsphenamin, of 0.3 gm. average dose, and five intraspinal injections of arsphenamized serum. There has been no particular change in the blood and spinal fluid. The last lumbar puncture, performed in November, 1921, gave a Wassermann positive in 0.1 c.c., globulin positive, 7 lymphocytes per cubic millimeter, and the colloidal gold test was 5555553300. On several previous tests the colloidal gold test had been somewhat weaker. The patient has had about five seizures since the onset of his difficulty. Following each of these he is confused and disoriented, and frequently shows aphasia, all symptoms clearing up after a comparatively short period. He has been able to work at intervals, but shows a slowly progressive deterioration.

The remaining patient was a passenger in a subway trolley when an explosion occurred. He was thrown to the floor of the car and slightly injured. A history of remote trauma was present in three cases, and was in all probability incidental to the development of paresis. In one case, symptoms appeared immediately after physical exhaustion. This patient worked incessantly for two days and two nights in zero weather on a dredging boat. At the end of this time he became excited and confused, presenting the first symptoms of paresis.

One patient developed initial symptoms after sunstroke. In another case, initial symptoms followed soon after an attack of lead poisoning. This patient was a painter.[23]

It should be noted that, in Case 10, initial symptoms of paresis appeared immediately after an accident. The patient, the driver of a motor truck, was jolted and thrown against the frame of the seat. There was no evidence of injury. Prior to the accident, no history of any unusual behavior on the part of the patient could be obtained.

In this case the employer is doubtless liable for compensation, since the accident—the precipitating cause of the paresis—"arose out of and in the course of employment," as the employee "was doing that which was expected of him at a time and place required by such duties."

Just how long an interval may elapse between trauma and paretic symptoms and shall entitle the case to be regarded as one of traumatic paresis is not definitely known. It is, however, a matter of considerable medicolegal importance.

Mott states that the symptoms of a post-traumatic paresis must not develop until after a week's interval of freedom from symptoms, since he believes that time is required to destroy or irritate the brain to the point of producing the paretic picture.

23. Other precipitating causes were: acute infectious disease, three cases in which initial symptoms of paresis appeared within one month after an attack of influenza; two cases in which initial symptoms appeared between one month and five months of an attack of influenza, and one case in which initial symptoms appeared six weeks after acute rheumatic fever. Mental overwork was ascribed as the immediate cause in one case; mental stress and strain in six cases; alcoholic debauch in one case, and childbearing in one case.

A number of cases of post-traumatic paresis have recently been reported by Osnato.[19] In these, symptoms appeared soon after the trauma: a few days in most instances, and not more than a few weeks in any of the cases.

Southard and Solomon [24] state "that it would seem, however, on general grounds that three months is the longest period in which the post-traumatic effects are likely to be delayed."

PROPER COURSE FOR INDUSTRIAL PHYSICIAN TO PURSUE WITH SYPHILITIC WORKMEN

It is apparent from the foregoing verdicts that if a syphilitic workman, while in the performance of his work, sustains, under certain circumstances, an injury which causes an aneurysm or paresis or any of the possible results of traumatizing syphilized tissue pointed out in this paper, his employer is liable for compensation, provided it can be shown that the injury arose out of and in the course of employment. The fact that the workman had a preexisting disease—syphilis—does not alleviate the responsibility of his employer for compensation for injury, disability or death indirectly due to syphilis. The statute prescribes "no standard of fitness to which the employee must conform, and compensation is not based on any implied warranty of perfect health, or immunity from latent and unknown tendencies to disease which may develop into positive ailments, if incited to activity through any cause originating in the performance of the work for which he is hired."

In view of the foregoing considerations, what should be the attitude of the industrial physician in the examination of applicants for work in which injury is likely to result? Should he have a Wassermann test performed as a routine, and refuse work to those showing a four plus reaction? This procedure would defeat workmen's compensation so far as the syphilitic patient is concerned, and would be unfair to most syphilitic patients and expensive to the employer. This procedure is unpractical; moreover, it is wrong sociologically, since it would discriminate against all syphilitic persons, and syphilis is by no means an uncommon disease.

Yet it is incumbent on the industrial physician to be fair both to the employee and the employer. What, then, should be his attitude toward the syphilitic workman? As a matter of fact, the risk the employer incurs through employing a syphilitic person is a very small one. There are scores of syphilitic workmen who have sustained injuries with no untoward result. When I was stationed at a base hospital in one of our army camps during the discharge of men returning from oversea service, Wassermann tests were made on hundreds of men, all of whom had seen oversea service; many were in front line service and sustained injuries from one or the other implements of warfare. None of those showing a positive reaction (the infection in many was of long duration) experienced, so far as could be determined, any untoward results of their injuries.

The risk to the employer of employing a neurosyphilitic employee is much greater than employing a syphilitic without a neuraxis involvement. White,[25] some time ago, referring to naval officers, stated that no officer with a positive Wassermann reaction should be in a position of command. From the standpoint of the industrial physician it is equally important to formulate the rule that no employee with neurosyphilis should be placed or retained in a position of great responsibility, such as locomotive engineer, or in a position of a hazardous nature. The potential danger of paresis is too great.

It is not possible for the industrial physician to examine the spinal fluid of all the syphilitic workmen, nor is it necessary.

The most important and perhaps the first objective sign of neurosyphilis is pupillary abnormality,[26] that is, irregularity of outline, which is almost always associated with sluggish reaction to light, stiff pupils, or the Argyll Robertson pupil. These abnormalities are equivocal and not an infallible symptom of neurosyphilis, since the latter may exist with normal pupils and other conditions may give rise to them. It is not uncommon to observe one or the other of these abnormalities, more particularly irregular pupils, in patients with tertiary syphilis who present no other evidence of neurosyphilis. It is of importance in the clinical examination of syphilitic patients to realize that isolated pupillary abnormality is not necessarily an expression of an existing neurosyphilitic process. From 30 to 40 per cent. of these patients with isolated pupillary abnormality have a negative spinal fluid. In these instances, if the infection has been untreated, the pupillary symptom is doubtless a scar of a spontaneously cured neurosyphilis.[27] It is not definitely known whether in these cases the spinal fluid again becomes positive and clinical symptoms of neurosyphilis appear. I am inclined to believe, however, that this occurrence is the exception rather than the rule. As a result of treatment of neurosyphilis, the spinal fluid may become negative; but pupillary as well as other neurologic abnormalities may remain indefinitely.

On the other hand, isolated pupillary abnormalities may be a forerunner for a long time of the development of frank symptoms of one or the other form of neurosyphilis. However, in these cases it is thought that the spinal fluid always yields a degree of positive reaction to the different laboratory tests. If the spinal fluid in these instances gives a positive reaction characteristic of that seen in paresis, it is believed that it represents the preparetic stage of paresis. It is this type of case that Southard and Solomon style paresis sine paresi, and it doubtless represents that type of syphilitic patient who, after experiencing a severe head injury such as is seen in Cases 6 and 7 or other precipitating cases of paresis, develops frank symptoms of paresis.

The exact significance, therefore, of an isolated pupillary abnormality in a syphilitic patient cannot be stated definitely unless the spinal fluid is examined.

A syphilitic workman with pupillary abnormalities on the clinical side, and a positive spinal fluid on the laboratory side, is a potential candidate for paresis if he is retained in a position of a hazardous nature in which he may sustain trauma. Such an employee should be given other work.

24. Southard, E. E., and Solomon, H. C.: Neurosyphilis, Boston, W. M. Leonard, 1917, p. 309.
25. White, W. A.: Lecture at Naval War College, 1914.
26. In 275 cases of neurosyphilis, Lowery and Benedict (Pupillary and Reflex Disturbance in Neurosyphilis, J. Nerv. & Ment. Dis. 52: 106-111 [Aug.] 1920) found in 70 per cent. of the cases some type of abnormal pupillary reaction: in 50 per cent. a stiff pupil, and in 40 per cent. the Argyll Robertson pupil. Bumke's study, "Die Pupillenstörungen bei Geistes- und Nerven-Krankheiten," Jena, 1911, may also be consulted.
27. Solomon, H. C., and Klauder, J. V.: Neurosyphilis with Negative Spinal Fluid, J. A. M. A. 77: 701-706 (Nov. 26) 1921.

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When an employee sustains an injury, it should be a routine procedure on the part of the industrial physician to have the Wassermann test made. If positive, antisyphilitic treatment should at once be administered. In this way untoward results of the injury will doubtless be prevented.

If a syphilitic workman has sustained severe head trauma and possibly cerebral injury, prolonged rest with intensive antisyphilitic treatment should be carried out. In this circumstance, the wisdom of performing a lumbar puncture for diagnostic purposes soon after the injury can be questioned in view of the disturbance of the meningeal-choroidal mechanism caused by lumbar puncture. In this way it is possible experimentally to infect the neuraxis from the blood.

1922 Spruce Street.

PROGRESSIVE LIPODYSTROPHY

REPORT OF CASE

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The affection described by Simons[1] in 1911 is clinically characterized by a symmetrical atrophy of the subcutaneous fat tissue of the upper parts of the body, beginning insiduously, as a rule, at the age of from 6 to 7 years, and sometimes about puberty or later. It affects at first the face and extends gradually to the neck, chest, upper extremities and upper region of the abdomen or even down to the iliac crests, until after a number of years it becomes stationary. The atrophy may become complete in intensity and impart to the face a repulsive "cadaverous" character; but it may be arrested spontaneously at any stage and locality, remaining, for instance, limited to the face and neck or spreading from here only to the thorax.

It does not extend to the lower parts of the body; within a few years or possibly less after the onset, in most cases, there takes place an abnormal, excessive accumulation of adipose tissue in the gluteal region, on the thighs and also on the rest of the legs; sometimes also in the lower region of the abdomen. Aside from the fat dystrophy there are no objective or subjective symptoms of any concern in cases without complications, and the patients enjoy good health and are able to do ordinary work.

In addition to the extreme and typical forms there exist incomplete cases, those observed by Laignel-Lavastine and Viard and by Cautley. Perhaps these cases are more frequent than is realized, and would be detected if the attention were more generally directed to this anomaly and to the subject of distribution of fat tissue under physiologic and pathologic conditions, and its clinical significance. It is noteworthy that among the twenty-one cases so far reported, only females have been affected, with the exception of two cases in boys reported by Husler and one recently by Klien.[2] In one case of Husler the fat atrophy was limited to the face, and in none was there hypertrophy of fat, so that the classification has been questioned.

In only one case was there regrowth of adipose tissue in the atrophic areas. In Osler's patient the meagerness of the face in a 10 year old girl had somewhat diminished eight years later. In the case reported here, an improvement on the arms during the last year is reported by the patient.

The histologic examination by Simons of skin of the subcutaneous tissue taken from the affected region of his patient revealed the absence of any trace of adipose tissue, and Feer found little fat.

1. Simons, A.: Lipodystrophia progressiva, Ztschr. f. ges. Neurol. u. Psychiat. 5: 29-38, 1911; ibid., 1913, pp. 277-397.
2. Klien, H.: München. med. Wchnschr., 1921, pp. 206-209.

REPORT OF CASE

History.—Mrs. C. S., aged 27, born in this country, had scarlatina, measles, chickenpox and diphtheria, but was otherwise a healthy child of normal body configuration. Her mother, born in a goiter region, of German descent, has a large goiter and is very obese, weighing 220 pounds (99.8 kg.). The sister weighs 125 pounds (56.7 kg.).

Between the ages of 11 and 17, the figure of the patient was rather full, the face "blooming," and the cheeks rosy; she was the picture of health. The lower extremities were then rather stout. The body weight at 17 was 150 pounds (68 kg.), and remained about the same until the age of 19. At this time her face and neck became progressively emaciated, and the rosy color disappeared, though her appetite was very good and she felt well. At 20 also the chest, her arms and the upper part of the abdomen had lost markedly in fulness. On the other hand, the lower part of the body, especially the lower extremities, had lost very little, thereby being so proportionately voluminous that friends commented on the fact. The patient's flesh had always been somewhat sagging, never firm and solid.

Menstruation began at 14, lasted from four to five days, occurred every four weeks, was very scanty, and was sometimes painful. There was no tendency to chilliness; on the contrary, to the touch of others she appeared always warm; the perspiration was perhaps of a lesser degree generally, though occurring profusely on the hands and feet, if she became excited.

A year before I saw her, when the patient married, her body weight was 133 pounds (60 kg.), but had increased since to 149 pounds (67.6 kg.). The increase of adipose tissue involved virtually only the lower part of the body, especially the lower limbs, the arms very little, and the face, neck and upper chest not at all; the mammae grew larger. The patient was sexually frigid.

Physical Examination.—The height was 161.5 cm. (5 feet, 3½ inches). The face was of healthy color, oblong and thin, though not at all haggard; the region of the fossae caninae was somewhat sunken. The scalp was covered with an abundant growth of fine, dark brown hair, of a normal luster. Beneath the chin was a small area in which the panniculus adiposus was well developed; otherwise the whole neck was strikingly lean. The contour of the sternocleidomastoid muscles was obvious; the jugular, supraclavicular and infraclavicular fossae were conspicuous. In the lower portion of the right lobe of the thyroid gland, a hard tumor the size of a walnut was palpable.

On the thorax the panniculus adiposus was very little, and on the upper extremities moderately, developed. The hands were small. The mammae were soft, pendulous and large, owing to well developed glandular tissue; the skin, with the subcutaneous tissue, was thin, flabby, and very mobile.

In striking contrast with the thinness of the upper parts of the body was the enormous development of the adipose tissue from the level of the hips downward, attaining on the nates and thighs almost monstrous proportions. Inspection gave the impression that all the fat had dropped from the upper to the lower portions of the body. The illustrations demonstrate this; especially if one compares the lean arms with the fat legs, or if one alternatingly covers the upper and lower half, one receives the impression that the halves belong to two different individuals. The feet were small; the size of the shoe was 4½. The maximum circumference of the upper arm was 25 cm. (10 inches); elbow, 22 cm. (9 inches); neck, 29.5 cm. (11¾ inches); the chest at the level of the third rib, 79 cm. (31 inches); the waistline, 63 cm. (24¾ inches); the hips, 90 cm. (35½ inches); at the level of the crurogluteal fold, 100.8 cm. (39¾ inches); the thigh at the level of the juncture, 63 cm. (24¾ inches; the

calf, 42 cm. (16½ inches); the right knee, 45 cm. (17¾ inches); left knee, 41.5 cm. (16⅜ inches); the ankle, 24 cm. (9½ inches). The lower body length was 77.5 cm. (30½ inches); the upper body length, 84 cm. (33 inches); span, 163 cm. (64⅜ inches). The distance of the shoulders (acromia) was 35.5 cm. (14 inches). The pelvimetric measurements were: 25.5, 29 and 32.5 cm. (10, 11⅜ and 12¾ inches).

The measures of the thickness of folds of skin and subcutaneous tissue raised at the various areas correspond to the great differences of fat distribution; they are: on the neck anteriorly, 2 mm. (1/12 inch); above the clavicles, 2 mm.; below the clavicles, from 3 to 4 mm. (⅛ to 1/6 inch); over the sternum, 6 mm. (¼ inch); the tissue covering the breasts, from 3 to 4 mm.; in the region of the spinae scapulae and between the scapulae, from 5 to 8 mm. (3/16 to 5/16 inch); the anterior aspect of the upper arms, 10 mm. (⅜ inch); lower part of the abdomen, from 20 to 25 mm. (¾ to 1 inch); anterior aspect of the thigh in its median portion, 95 mm. (3¾ inches); dorsum pedis, 3 mm. (⅛ inch). The fat tissue of the gluteal region, the trochanters and the calves was too abundant or too firm or not sufficiently movable to allow of a correct application of the calipers.

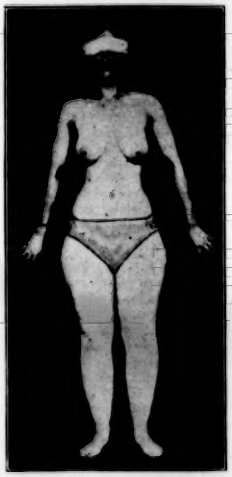

Fig. 1.—Anterior view of patient.

The skin was normal, and showed in some areas of the lower regions of the body the fine lobulations of the underlying fat tissue. The hair of the genitalia and in the axillae was well developed. So were the external genitals. The heart was somewhat enlarged; the uterus, rather small and soft. The muscles and nerves gave no evidence of any disturbance. In the urine there was no albumin or sugar. Circumstances rendered it impossible to test the sugar tolerance or other functions of the endocrine glands. The roentgenologic examination of the head, chest, shoulders, spine, pelvis and femurs revealed no anomalies in the osseous structures.

COMMENT

The diagnosis rests on the history of wasting of the adipose tissue in the upper and its excessive increase in the lower regions of the body, and on the corresponding objective findings. The actual measurements of the patient allow comparison with those reported by other authors. The adipose tissue in the upper part is thereby revealed as considerably reduced, really hypotrophic and atrophic, and in the lower regions much increased, really hypertrophic in comparison with measures obtained in various types of normal women. That the circumference of the waist line and the thigh is the same demonstrates strikingly the anomaly of proportions; likewise the situation of the maximum width of the middle portion of the body at the level below the intertrochanteric line. It is noteworthy that the abundant adiposity of the lower limbs was present early, as in the patients of Laignel-Lavastine and Viard and Cautley, and became more manifest during the last year, when the patient had regained the body weight of nine years before. In the case of Herrman,[3] the only one reported in this country, atrophy began in the face at the age of 6 and spread gradually to the neck, thorax and arms; the hypertrophy of fat in the lower regions did not set in until after the marriage of the patient, at 22.

ETIOLOGY AND PATHOGENESIS

The cause and nature of the affection are obscure. Whether a hereditary factor, adiposity, thinness, lipomatous growths and unusual distribution of fatty tissue in the ancestors plays any rôle is not known. Simons considers the affection as a trophoneurosis, a "sister of muscular dystrophy," the limitation of the fat atrophy to the upper parts of the body militating in his view against the assumption of an endocrine disturbance. The supposition of a derangement of hypophysial function or hyperthyroidism (Feer) fails to explain the clinical picture. Since the disease affects principally women and leads to a localized augmentation of fat tissue at sites normally accentuated in the female sex, some authors believe that a disturbance of the ovaries is the responsible factor in the pathogenesis of the disease. Yet the distribution of adipose tissue in ovarian hypofunction is somewhat different; and the good development of mammae and other sexual characteristics, the normal proportions of the skeleton and likewise the appearance of the atrophy of fat in childhood as the initial symptom argue against this theory. Klien believes in a connection of the atrophic complex with abnormal involutionary processes or other affections of the pineal gland, while the hypertrophic complex observed in the female may be explained by the hormones of the ovaries. The latter not only have an inhibitory effect on the fat tissue in general, but, on the other hand, promote also fat accumulation at the hips and in the gluteal region during puberty and the period of sexual activity as secondary sexual characteristics. Thus one may understand that these accumulations should be especially marked if in lipodystrophy the building material for adipose tissue circulating in the blood is especially abundant on account of its being unavailable for the upper parts of the body. So far no therapeutic measures have proved useful. In the case of Jalowicz, all dietary measures were followed by an augmentation of the fat tissue in the pelvic region only.

Fig. 2.—Posterior view of patient.

4557 Broadway.

3. Herrman, Charles: Progressive Lipodystrophy, Arch. Int. Med. 17: 516-534 (April) 1916.

CONGENITAL OBSTRUCTION OF THE DUODENUM

REPORT OF CASE

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This case of a rare congenital anomaly is of such clinical interest that it will well bear a somewhat detailed report.

REPORT OF CASE

Robert P., a boy, aged 5 weeks, first seen by me, Sept. 4, 1921, was the second child, the first baby having died of cerebral hemorrhage, shortly after birth. His weight at birth was 7½ pounds (3.4 kg.). He had not been breast fed. During the first two weeks he was markedly jaundiced, and this condition still persisted slightly. He had a tendency to vomit after his feedings, but this had not been considered as very marked. His weight progress had not been recorded. His formula at the date of my first visit was: whole milk, 8 ounces (236 c.c.); water, 10 ounces (295 c.c.); dextrimaltose, 1 tablespoon (4 fluidrams, 15 c.c.); five feedings a day, from 3 to 4 ounces (89 to 118 c.c.) at a time. The stools were said to be normal. The present weight was 8 pounds (3.4 kg.). He was very frail in appearance; he was pale, with a yellowish tinge; the superficial veins were marked. The helix of the ear was abnormally long, thin and infolded. There was a decided slant to the eyes, and an epicanthus was present. However, careful examination failed to demonstrate any other evidence of mongolism. The head measured 13⅞ inches (35.5 cm.) in circumference; the chest, 12⅞ inches (33 cm.), and the abdomen, 12½ inches (32 cm.). Examination of the chest was negative. The liver was 2 or 3 cm. (from ¾ inch to 1⅛ inches) below the costal margin; the spleen could not be felt. The epigastrium was prominent, and slight gastric peristaltic waves were noted. An indefinite mass was palpable in the region of the pylorus. Inquiry developed the fact that the patient had vomited forcibly on the morning of this day. He was given atropin, and a slight change in the formula was made.

Fig. 1.—Stomach (1) and dilated portion of duodenum (2) partially obscured by stomach, forty minutes after barium meal.

A few days later, when seen again, he was vomiting forcibly after every feeding, and had lost 8 ounces (225 gm.) in weight. There seemed to be no question of the presence of a pyloric tumor at this examination. The formula was changed to a farina paste followed by breast milk. Atropin was continued. His weight continued to drop for a few days and then a satisfactory rise began, the baby gaining 12 ounces (340 gm.) in fifteen days. September 25, the weight was again at 8 pounds (3.4 kg.). However, daily vomiting continued to some extent. Constipation was the rule. The weight continued to rise, and on October 2 was at 8 pounds 8 ounces (3.9 kg.). The general condition of the baby, however, was not satisfactory. The bones of the head were soft, and all sutures were palpable. The abdomen was greatly distended. Gastric peristaltic waves were well marked. A Wassermann test taken at this time was negative; hemoglobin, 102; erythrocytes, 5,120,000; leukocytes, 14,500. The feedings were breast milk and a farina paste made of breast milk.

Following a change to a mother's milk higher in fat content, his condition changed for the worse; vomiting became more frequent and the weight remained at a standstill for two weeks. October 13, it was 8 pounds 7 ounces (3.6 kg.) After this, in spite of the most painstaking care in the feedings, the weight declined until, by October 18, it was back at 8 pounds (3.4 kg.).

Several men saw the baby in consultation, one of whom confirmed the presence of pyloric tumor. This, however, was always somewhat in doubt. Visible peristalsis, however, could be demonstrated without difficulty at almost any time, and typical projectile vomiting was frequent. On this date (October 18) it was felt that the limit of safety without interference had been reached, and the baby was removed to the hospital for a Rammstedt operation.

The operation, under local anesthesia, supplemented by light ether, was performed by Dr. W. A. Coventry. No pyloric tumor was found. The operator did not consider the muscular ring unduly thickened, while the lumen of the pylorus was exaggerated. The duodenum presented a grossly dilated condition, which ended abruptly about at the juncture of the second and third part. Nothing, however, could be found to explain this, and the incision was rapidly closed. The temperature rose to 106 after the operation, but following a sinus injection of dextrose solution the condition improved and immediate recovery was uneventful. But the local condition did not improve. Four-hourly stomach irrigations and tube feedings of breast milk were resorted to. It was soon found that the stomach did not empty, and that after four hours more could be washed from the viscus than had previously been inserted. On one occasion, after thoroughly emptying the stomach, a gush of bile-stained curds followed on turning the baby on its abdomen.

A barium meal was given and a fluoroscopic examination made as soon as possible, in consultation with Dr. L. L. Merriman. This disclosed that the stomach was moderately dilated but emptied promptly, with vigorous peristalsis, through an easily patent pylorus. The duodenum filled up promptly, but did not empty. In forty minutes nothing passed into the jejunum. The end of the duodenum was rounded, and the amount of barium in the duodenum was apparently about half the amount introduced. A diagnosis of obstruction (due perhaps to hernia at the fossa of Treitz) was made, although the diagnosis of congenital diverticulum was also considered.

The weight in spite of intraperitoneal fluid, frequently given, and in spite of transfusion with the father's blood, etc., continued to decline. A jejunostomy was decided on as offering a possibility of building up the baby as a preliminary to a permanent short-circuiting. This was done by Dr. Coventry, and was well borne. However, it was of no avail, as food was not well tolerated. It was surprising to note that the fixation of the jejunum to the abdominal wall seemed to permit the duodenum to empty and it was possible to feed breast milk again by stomach. However, the weight steadily declined, and the fatal ending came, November 8, at the age of 14 weeks.

The necropsy, performed by Dr. Benjamin F. Davis, disclosed the stomach one-third larger than normal, and its walls between 4 and 5 mm. (about 3/16 inch) in thickness. The pylorus was patent and admitted the first joint of the index finger readily. The pyloric sphincter was moderately hypertrophic. The duodenum immediately beyond the pyloric sphincter was enormously dilated in the first portion, the dilation ceasing abruptly 1 cm. (⅜ inch) proximal to the ampulla of Vater. Here the lumen of the bowel was reduced to an oval opening (2 by 3 mm. [1/12 by ⅛ inch] in diameter)

by a diaphragm of mucous membrane 1.5 mm. (1/17 inch) in thickness. Distal to this diaphragm the duodenum was normal. The dilated portion of the duodenum was nearly spherical, and measured 5.5 cm. (2 1/4 inches) in its greatest diameter. The wall of this dilated sac was definitely hypertrophied to about one-half the thickness of the thickened stomach wall. There were no anomalies of the bile ducts. Histologic examination of this diaphragm revealed that it contained all the coats of the bowel wall.

Fig. 2.—Stomach (1) and dilated portion of duodenum (2).

The illustrations, for which I am indebted to Dr. L. L. Merriman, give an accurate idea of the pathologic findings. Figure 1 hardly portrays the fluoroscopic picture as described, for the reason that the duodenum has regurgitated part of the barium and is also partly obscured behind the stomach.

COMMENT

The credit of reporting the first case of congenital duodenal obstruction probably belongs to Calder, with his case report of 1752. Although this subject has attracted the interest of many able writers, Cautley,[1] in the latest compilation I have seen (1919), estimates the number of reported cases as only about 100. Cordes[2] reviews the earlier literature, and his case (reported in 1901) was interesting in that there existed, besides atresia of the duodenum, an anomaly of the common bile duct, a branch of which entered the dilated sac above the atresia. Most of the discussion in the various papers concerns itself with the postmortem findings. The defect is usually in the neighborhood of the papilla of Vater, most often slightly above it, sometimes opposite, and occasionally below. A less common site of obstruction is at the duodenojejunal juncture. Atresia is more frequent than stenosis. Death usually occurs in the first ten days. Buchanan reports a case, similar to mine, with a partial duodenal septum (aperture, 2.5 mm. [3/32 inch]) in a child that lived eighteen months. Those cases in which the obstruction is due to a complete or perforated diaphragm which contains the usual coats of bowel wall are rare. It is more usual to find an upper segment ending blindly and connected by a band of varying thickness with the lower segment. Rarely this connection is by mesentery only.

Cockayne[3] reports a rare case with complete interruption in continuity of the two portions. Little and Helmholz's[4] case (occurring with a complete situs transversus) is unique in that there was complete absence of the pylorus and duodenum as far as the papilla of Vater.

In stenosis, the length and degree are variable. Cautley's patient lived between twelve and thirteen months, although the stenosed second part of the duodenum admitted only a probe.

In regard to etiology, recent writers accept the idea of a primary developmental defect. This was suggested by Bland Sutton in 1889. He stressed the importance of the observation that malformations occur at the sites of "embryological events." Thus, liver and pancreas appear as outgrowths from the primitive duodenum, and it is conceivable that an excess of closure might occur. Cordes suggests that the malformation in some way may be bound up with defective formation of the common duct. A common site of intestinal atresia also is in the ileum, either at the ileocecal juncture or at Meckel's diverticulum. This idea of Bland Sutton's, while failing to explain a minority of cases, is strongly supported by the work of Tandler[5] and Ager.[6] Tandler showed that the duodenum, in its vaterian segment, is completely occluded by epithelial proliferation during the second month of fetal life, and atresia may be due to failure of this obstruction to break down. It would be conceivable that the multiple occlusions described could thus occur, or that stenosis could result from a partial canalization. Ager also states that in embryos of 12 mm. (15/32 inch, fifth week) the duodenal lumen is temporarily obliterated.

Various other suggestions have been made, mostly unsupported. Volvulus with secondary peritonitis, primany syphilitic or tuberculous peritonitis, embolism of the superior mesenteric artery, or circulatory changes due to disease or to congenital absence of normal vessels have all been suggested as etiologic factors. The case of Little and Helmholz (the only one of its type, I believe, on record), indeed, presented marked vascular anomalies, but was a very unusual case in many respects.

Fig. 3.—1, obstruction of duodenum; 2, dilated portion of duodenum; 3, pylorus; 4, stomach.

Clinically, of course, interest centers in diagnosis and treatment. The confusing thing in most case reports is the differential diagnosis from pyloric stenosis. Forcible vomiting, gastric peristaltic waves, pres-

1. Cautley, E. Brit. J. Child. Dis. **16**: 65 (April-June) 1919.
2. Cordes: Arch. Pediat. **17**: 401, 1901.
3. Cockayne, E. A.: Brit. J. Child. Dis. **14**: 188 (July-Sept.) 1917.
4. Little and Helmholz: Bull. Johns Hopkins Hosp. **16**, No. 172, 1905.
5. Tandler: Anat. Anz. **18**: 42, 1900.
6. Ager: Arch. Pediat. **27**: 135, 1910.

ence in the stomach of the entire previous feeding, and absence of milk stools will occur in both conditions. Bile in the vomitus may be absent in duodenal obstruction if the obstruction is above the duct (as usually occurs). A tumor may be felt in both conditions, the dilated and hypertrophied muscle in the ring and wall giving the sensation. This was my experience, and Cautley and others speak of it also.

But if the precaution is taken of using the barium meal and fluoroscope to supplement the clinical findings, an early diagnosis becomes possible, and timely operation will save some of these infants. I think that at present there are only one or two successful operations on record (the case of Abel's in an 8 weeks old child and the case of Ernst's in a 10 days old child). There may be more recent successes that I have not come across. An early gastro-enterostomy is the operation of choice, although Ernst succeeded with a duodeno-entero-anastomosis, the ideal operation, if possible. The fixation of the duodenum makes it a difficult proceeding, especially in the infant. In this case the diagnosis could not be made from external inspection of the bowel at the time of the first operation. The jejunostomy was a logical procedure for temporary purposes, and would have been of great benefit in an older child. Probably leakage from the wound contributed to the poor result. Had the diagnosis been made before the first operation, the chance for success with a gastro-enterostomy would have been fair.

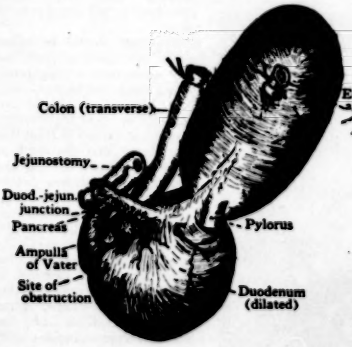


Fig. 4.—Posterior aspect of stomach and duodenum, showing relative size of duodenum proximal and distal to obstruction.

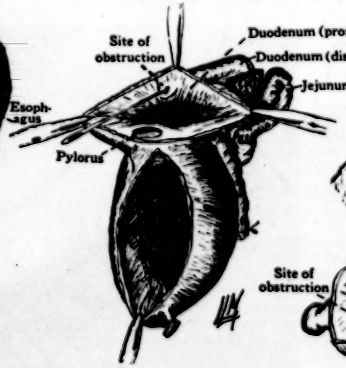


Fig. 5.—Anterior aspect of stomach and duodenum. The probe passes through the small orifice in the obstructing membrane.

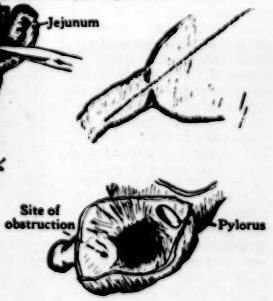


Fig. 6.—Above, transillumination of site of obstruction, with probe in situ; below, relative size of pylorus and orifice at site of obstruction.

Typhus in Russia.—Data received from Russia indicate an increase of typhus, particularly marked in the northeastern and northern parts of the country. Similar important increases are noted in all governments in the Ural region and in Petrograd and Moscow relapsing fever is increasing markedly, particularly in the Ural region, where 3,493 cases were reported during the first two weeks of November. In the same region 2,200 cases of enteric fever were reported in November, although some of these may be due to confusion with typhus. For the week ending December 3, 195 cases of typhus were reported in Moscow, seventy-three in Petrograd and 590 cases in Perm.—*Bull. League of Nations Health Section.*

A NEW METHOD FOR THE DETERMINATION OF CALCIUM AND THROMBIN IN SERUM*

FRED WEST
ASSISTED BY JOHN BAUER AND KATHRYN BARNICKOL
BALTIMORE

Many methods have been put forth, some simple and some very elaborate, to give correct coagulation time. They are all so untrustworthy that most clinical workers are content to take the coagulation time of 5 or 6 c.c. of blood, withdrawn in a Keidal tube, and compared with the mean time of normals taken under the same conditions.

When one has decided that a coagulation time is too slow, one does not know which factor is at fault. Three factors are involved—serum calcium, prothrombin and fibrinogen. Heretofore, the estimation of serum calcium could be made only chemically, a long and tedious proposition. The result was total calcium, i. e., ionizable and nonionizable, so that one was really no wiser than before; for a total calcium may be normal with a subnormal ionizable or available calcium. Nor have we any accurate method of determination of either thrombin or its precursor.

It is the purpose here to advance a method of determination of available calcium in fresh serum, and at the same time to express in terms of calcium the amount of thrombin present. It will readily be seen that the calcium determination is accurate, simple and rapid, involving no calculations and using only the plasma centrifuged from the citrated blood taken for the Wassermann work, and calcium controls. Thrombin, of course, depends on two factors, available calcium and prothrombin. If, then, a thrombin result is low when the calcium is normal, it follows that prothrombin is deficient. If both are normal and still the coagulation time is slow and the clot weak, fibrinogen must have been deficient.

* From the Laboratories of the Howard A. Kelly Hospital.

METHOD

Reagents.—1. Citrated plasma. Sheep's blood is used in all our work. A bottle is half filled with 2.38 per cent. sodium citrate, i. e., a tenth normal solution, and filled up with blood at the abattoir. This is then centrifuged, and the plasma is pipetted off and kept in an icebox for this test. The cells are washed and kept for the Wassermann work. The plasma should be fairly free from hemolysis and can be used for a week if kept cold.

2. Fiftieth normal calcium chlorid solution, i. e., a solution containing 0.219 mg. of calcium chlorid per hundred cubic centimeters of water. This is made from chemically pure calcium chlorid crystallized with six molecules of water.

Crystalline calcium chlorid, being deliquescent, is usually covered with a liquid layer. In our work this is removed, the stoppered bottle allowed to stand in hot water until the contents are melted, cooled, and, just before crystallization, pipetted out and weighed in a beaker. This obviates tedious drying of crystals, to say nothing of the difficulty of digging out the crystalline mass.

3. Standard calcium chlorid solutions, containing 5, 7, 9, 11, 13, 15, 17, 19 and 21 mg. of calcium element per cent. Five and four hundred and seventy-five thousandths grams of $CaCl_2.6H_2O$ in 1 liter of water contains 100 mg. of calcium element per cent. The foregoing dilutions are made from this standard solution.

4. Patient's serum. Blood is taken as for the Wassermann test. Clots should be allowed to stand at least one hour before the serum is separated, and it is much more accurate to separate all serums after the same interval of time. We prefer a two hour period after clotting. The serum is removed and one portion kept unheated for the thrombin factor; the other portion is heated for thirty minutes at 58 C. to destroy the thrombin. This heated material is used for the calcium determination. Raising to 58 C. does not affect the clotting power of ionizable calcium.

Preliminary Test.—Serum calcium is too low in concentration to coagulate plasma containing the foregoing amount of citrate. This difficulty is overcome by adding calcium chlorid to the plasma until the coagulation point is approached. The best results are obtained when the treated plasma will not coagulate for several hours. A preliminary test to determine the quantity of fiftieth normal calcium chlorid required to produce coagulation in the plasma in thirty minutes without the addition of any serum calcium is set up as in Table 1, using small test tubes such as are used for Wassermann work.

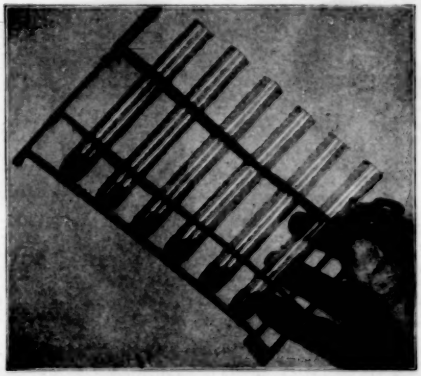
TABLE 1.—PRELIMINARY TEST*

Tube	N/50 $CaCl_2$ C.c.	Plasma, C.c.	Coagulation Time at Room Temperature 5′	10′	15′	20′	25′	30′
1	0.1	0.5	...	...	...	..	—	—
2	0.2	0.5	...	...	...	...	—	2+
3	0.3	0.5	...	...	...	...	2+	3+
4	0.4	0.5	...	...	..	2+	3+	
5	0.5	0.5	...	...	2+	3+		

* In the tables, + indicates weak jell; 2+ (++) fair clot; 3+ (+++) firm clot (can be inverted).

In this sample test 0.3 c.c. added to 0.5 c.c. of plasma coagulates in thirty minutes. This is too fast a system. Tube 2, with 0.2 c.c., will give the ideal system. Immediately before the actual test, a calcium treated plasma is prepared by adding 0.2 c.c. of fiftieth normal calcium chlorid to each 0.5 c.c. of the original plasma used. Thus, to 10 c.c. of plasma, 4 c.c. of fiftieth normal calcium chlorid is added and mixed thoroughly. These figures, of course, apply only to the foregoing case in which 0.2 c.c. of calcium chlorid produces no coagulation in thirty minutes.

Technic of Test.—Into consecutive test tubes are introduced 0.5 c.c. of 5, 7, 9, 11, 13, 15, 17, 19 and 21 mg. per cent. of calcium chlorid. This requires nine tubes. If the same pipet is used, it is essential to proceed from the weak dilution to the strong. Into Tube 10 is introduced 0.5 c.c. of the patient's serum unheated, and into Tube 11, 0.5 c.c. of the heated serum. At this point the requisite amount of calcium chlorid, as determined by the preliminary test, is added to 10 c.c. of the plasma and thoroughly mixed. Into all the tubes, 0.5 c.c. of the treated plasma is introduced rapidly and mixed with a whirling motion so as to avoid the formation of bubbles. The tubes are kept at room temperature, and the coagulation time of each tube is noted. (The coagulation times of the calcium dilutions will usually be from three to six minutes apart.) The extent of clotting is described by one, two or three plus signs. Unnecessary handling is avoided and the individual tubes are not touched. The whole rack is tilted for each reading. This insures equal treatment to all uncoagulated tubes.



Method of observing degree of coagulation during test.

Readings should be taken every few minutes until the last serum tube is coagulated. The 21 mg. per cent. of calcium chlorid should be coagulated in about ten minutes. Any great variation from this time means that too much or too little calcium chlorid was added to the plasma before the test.

Interpretation of Readings.—It will readily be seen that two tubes with the same coagulation time contain the same amount of calcium, if calcium is the only clotting agent present. Thus, if the coagulation time of the heated serum coincides with the 9 mg. per cent. calcium tube, it necessarily contains 9 mg. per cent. of calcium, as any thrombin which it had was destroyed by heat. If the coagulation time falls half way between 7 and 9 mg. per cent., the serum contains 8 mg. per cent. of calcium. Thus, the calcium content is read directly. Again, if the unheated serum coagulates with the 19 mg. per cent. calcium tube, it contains the clotting equivalent of 19 mg. per cent. of calcium. But if we know from the heated serum tube that it contains only 9 mg. per cent. of calcium, by simple subtraction we can state that its thrombin content is equivalent to $19-9=10$ mg. per cent. of calcium.

This may not be an absolutely logical method of expressing thrombin value, but it gives us a definite figure and consequently comparative values.

The method of recording results is illustrated in the cases presented in Table 2. These particular cases were chosen to illustrate the three types of cases, namely, normal, low calcium and low thrombin.

COMMENT

In a series of normal cases, we found that the average normal figure is from 9 to 10 mg. per cent. for calcium and about 20 mg. per cent. for calcium and thrombin. Subtracting the calcium, we have a figure of from 10 to 11 for thrombin. We do not presume to interpret results at this stage or to say what the high and low limits may be, but very little variation

from these figures is found in the normal cases so far worked out. We hope, with the collaboration of other workers, that exact limits will be defined and the interpretation of results put on a sound basis. This method opens a way to test results of feeding calcium, and also to find the calcium variations in different pathologic conditions. When any of the commercial thrombin preparations are used, it affords a method of comparing their actual values in vivo.

TABLE 2.—EXAMPLES OF CASES

Case 1, normal.

Tube	$CaCl_2$ c.c.	$CaCl_2$ Mg.%	Serum	Plasma, c.c.	Coagulation Time 12′	15′	18′	21′	24′	27′	30′	33′	36′
1	0.5	5	Nil	0.5	...	...	...	...	...	...	...	...	2+
2	0.5	7	Nil	0.5	...	...	...	...	...	...	...	2+	3+
3	0.5	9	Nil	0.5	...	...	...	...	...	...	2+	3+	
4	0.5	11	Nil	0.5	...	...	...	...	...	2+	3+		
5	0.5	13	Nil	0.5	...	...	...	...	2+	3+			
6	0.5	15	Nil	0.5	...	.	...	2+	3+				
7	0.5	17	Nil	0.5	...	...	2+	3+					
8	0.5	19	Nil	0.5	...	2+	3+						
9	0.5	21	Nil	0.5	2+	3+							
10	Nil		0.5 c.c. (heated)	0.5	...	...	...	...	...	...	2+	3+	
11	Nil		0.5 c.c. (unheated)	0.5	2+	3+							

Calcium content (heated), 9 mg. %.
Thrombin content (unheated — heated), 21 − 9 = 11 mg. %.

Case 2, thrombin shortage (purpura hemorrhagica).

Tube	$CaCl_2$ c.c.	$CaCl_2$ Mg.%	Serum	Plasma, c.c.	Coagulation Time 9′	12′	16′	20′	24′	28′	32′
1	0.5	5	Nil	0.5	...	...	...	...	...	...	...
2	0.5	7	Nil	0.5	...	...	...	...	...	...	+
3	0.5	9	Nil	0.5	...	...	...	...	...	+	3+
4	0.5	11	Nil	0.5	...	...	...	...	+	3+	
5	0.5	13	Nil	0.5	...	...	...	+	3+		
6	0.5	15	Nil	0.5	...	...	+	3+			
7	0.5	17	Nil	0.5	...	+	3+				
8	0.5	19	Nil	0.5	+	3+					
9	0.5	21	Nil	0.5	3+						
10	Nil		0.5 c.c. (heated)	0.5	...	...	...	...	+?	2+	3+
11	Nil		0.5 c.c. (unheated)	0.5	...	...	+	3+			

Calcium content (heated), 10 mg. %.
Thrombin content (unheated — heated), 15 − 10 = 5 mg. %.

Case 3, calcium shortage (neurotic patient, hypersensitive).

Tube	$CaCl_2$ c.c.	$CaCl_2$ Mg.%	Serum	Plasma, c.c.	Coagulation Time 10′	14′	18′	22′	26′	30′	34′	38′	42′
1	0.5	5	Nil	0.5	...	...	...	...	...	...	...	2+	3+
2	0.5	7	Nil	0.5	...	...	...	...	...	...	2+	3+	
3	0.5	9	Nil	0.5	...	...	...	...	...	2+	3+		
4	0.5	11	Nil	0.5	...	...	...	...	2+	3+			
5	0.5	13	Nil	0.5	...	...	...	2+	3+				
6	0.5	15	Nil	0.5	...	...	2+	3+					
7	0.5	17	Nil	0.5	...	2+	3+						
8	0.5	19	Nil	0.5	2+	3+							
9	0.5	21	Nil	0.5	3+								
10	Nil		0.5 c.c. (heated)	0.5	...	...	...	...	...	...	...	2+	3+
11	Nil		0.5 c.c. (unheated)	0.5	...	2+	3+						

Calcium content (heated), 5 mg. %.
Thrombin content (unheated — heated), 17 − 5 = 12 mg. %.

Chemical calcium determinations were made by one of us (Bauer), and were found to parallel our ionizable calcium figures closely in the normal cases. Halverson and Bergeim's [1] modification of the McCrudden method was used. In all cases the chemical analyses yielded higher results than the coagulation method. We are inclined to place the available calcium as from 70 to 75 per cent. of the total in normal cases. Von Meysenbug, Pappenheimer, Zucker and Murray [2] give a figure of from 60 to 70 per cent. for their diffusion method. The colloidal calcium may be obtained from the chemical and the coagulation figures by subtraction, e. g.:

	Chemical Ca (Total)		Ionizable Ca		Colloidal Ca
Normal	12.4 mg. %	−	9 mg. %	=	3.4 mg. %
Asthmatic	13.4 mg. %	−	7 mg. %	=	6.4 mg. %

1. Halverson, J. O., and Bergeim, Olaf: J. Biol. Chem. 32:159 (Nov.) 1917.
2. Von Meysenbug, L.; Pappenheimer, A. M.; Zucker, T. F., and Murray, Marjorie, F.: J. Biol. Chem. 47:529 (Aug.) 1921.

SUMMARY

A new clinical test gives definite and accurate figures on the coagulation factors, ionizable calcium and thrombin.

The amount of serum required is 1 c.c. The blood is taken as for the Wassermann test.

The test involves no calculations, and the technic is very simple, requiring no special apparatus, and calling for no chemical procedures.

The time required for a serum calcium determination, with titrated plasma on hand, is approximately one hour.

1418 Eutaw Place.

CHRONIC OSTEO-ARTHROPATHY.

REPORT OF A CASE IN A CHILD AGED TWENTY-EIGHT MONTHS

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AND
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Since Marie [1] described the disease now known as chronic pulmonary osteo-arthropathy, additional cases have been frequently reported. However, comparatively few of these reports appear with roentgenograms, and sufficient evidence of their being true cases of osteo-arthropathy is lacking in many cases.

The name "chronic hypertrophic pulmonary osteo-arthropathy" is a cumbersome one and, as has been pointed out by several writers, and as is borne out by the case here reported, is a misnomer. Although all early cases reported appeared as secondary to a chronic pulmonary disease, notably in tuberculosis, bronchiectasis and empyema, it has since been found that the same changes, i. e., clubbing of the fingers and toes, together with the bone changes, sometimes occur when there is no demonstrable disease of the lungs or pleura. Thayer compiled forty-three instances secondary to lung disease and twelve to other causes. Congenital heart disease,[2] chronic valvular heart disease, cystitis, pyelonephritis, syphilis and other diseases have been reported as the primary disease.[3] Brooks,[4] however, in a study of these reports, does not consider these typical cases.

There can be no doubt that suppuration is not necessary to be present as a cause. Unquestionable cases have been reported as occurring with neoplasms of the lungs. The view now generally accepted is that the clubbing of the fingers and toes, together with the bone changes occurring at the distal ends of the long bones, is due to a long-standing passive hyperemia or a venous stasis, and not as a result of the absorption of toxins from a chronic suppurative process. The

1. Marie: Rev. de méd. 10:1, 1890.
2. Shaw and Cooper: Lancet 1:880, 1907.
3. Miller: Arch. Pediat. 22:161, 1905.
4. Brooks: New York M. J. 98:608, 1913.

changes noted are where one would expect them if due to a passive congestion, namely, the distal ends of the extremities; the more marked the congestion, the more proximally the changes extend. Pulmonary tuberculosis or lung abscess does cause circulatory changes, while chronic heart disease or a sarcoma of the lung

Fig. 1.—Burrlike expansion of tips of distal phalanges of fingers. Periosteal thickening of proximal phalanges and metacarpals. The flesh shadows show typical clubbing of the fingers. An identical condition was present in the roentgenogram of the feet.

Fig. 2.—Marked periosteal thickening of radius and ulna; absence of thickening at upper end of humeri.

are not suppurative. It is also noted that many cases show a thickening of the subcutaneous tissues of the malar regions probably of a similar etiology to that of club fingers.

The age of the patient appears to have an important influence. Periosteal reactions are more easily stimulated in a child, and the cases reported in which there has been marked bone changes have been in children.

Janeway [5] and Locke [6] recognize different stages of the disease, and consider clubbing of the fingers and toes with no bone changes the same process but occurring at an early stage. This stage may not necessarily proceed to later stages. Contrary to the prevailing opinion, Locke finds changes by roentgenogram in the distal phalanges which he describes as a burr-like expansion. Baetjer and Waters describe the changes as a periostitis with the calcified periosteum raised, with a clear space between it and the bone. Locke, however, adds that later the line of demarcation of old and new bone may not be present, and that the bone may be enormously thickened. In the later stages there may be a thickening of the periarticular tissues, the presence of an effusion and erosion of the cartilage causing the joint symptoms of swelling, pain and stiffness.

The case here reported is of interest because of the age of the patient, the extent of the bone involvement, and the absence of any physical or laboratory findings that would indicate the presence of a primary

Fig. 3.—Marked thickening of femurs; no pathologic condition in pelvis.

disease. Neither do former observations nor past history account for the findings. The only clue found was that on both physical and roentgenographic examination the heart was found to be definitely enlarged.

No attempt at an exhaustive review of the literature has been made. The few most important references quoted are representative of the various discussions.

REPORT OF CASE

L. B., a girl, aged 28 months, whose family history was negative and whose mother had had no miscarriages, was normal at birth. She was breast fed eight months, and then fed on a Mellin's food formula until 1 year old, when cereals and whole milk were started. Teeth appeared at 6 months, and she apparently developed normally except that she was slow in learning to talk and walk. There was no history of any bone or joint tenderness, stomatitis or bleeding. She began walking at 19 months, and when 22 months old was taken to the Mount Sinai Hospital outpatient department. At that time enlarged wrists, rosary and open fontanel were noted, and a diagnosis of rickets was made. Nothing abnormal was detected in the heart. Orange juice and a general correction of the diet were prescribed. The Wasser-

5. Janeway: Am. J. M. Sc. **126**: 563, 1903.
6. Locke, E. A.: Secondary Hypertrophic Osteo-Arthropathy and Its Relation to Simple Club-Fingers, Arch. Int. Med. **15**: 659 (May) 1915.

mann test was negative. There was no change noted in her condition until June, 1921, when she was accidentally burned and was admitted to the hospital. At that time clubbed fingers were noted, a roentgenogram of which did not disclose any pathologic condition of the bone in the phalanges or metacarpals. In July the diagnosis of rickets was reaffirmed, and the child was sent to Rainbow Hospital for the advantages of fresh air and sunlight. A careful search was made to find some condition present that would account for the clubbed fingers and toes. A definite enlargement of the heart was confirmed by several observers. The right border of dulness was 1.5 cm., the left border, 9 cm. from the midline. No murmur was definitely made out, and no thrill. Repeated examination failed to disclose cyanosis on crying or at any other time. The lungs were clear to percussion and auscultation. Roentgen-ray examination confirmed enlargement of the heart. The Wassermann test was negative. There was no general glandular enlargement, no scars about the mouth or any other clinical evidence of syphilis. The most remarkable thing on examination of the extremities was the marked thickening of all the long bones and the clubbed fingers and toes.

Fig. 4.—Extensive periosteal reaction of shafts of tibia and fibula. The epiphyses are not flaring or saucer shaped. The tarsal bones show normal development. Line of increased density just above lower epiphysis.

DIFFERENTIAL DIAGNOSIS

Congenital syphilis may be ruled out by the absence of any suggestive family or past history, two negative Wassermann tests, and the absence of any clinical evidence of syphilis. One would not expect the extensive thickening of the shafts of the long bones as due to rickets when the appearance of the epiphyses is not that of rickets. In many respects the roentgenographic appearance was similar to that of infantile scurvy, particularly a suggestive Trümmer zone at the lower ends of the tibiae. Scurvy, however, will not explain the clubbed fingers and toes, and the bone changes of the metacarpals and distal phalanges in this case. A careful history revealed nothing even suggestive of there being a scurvy present during the first twenty-two months of life, and from that time on the diet of the child has been under constant supervision. It is likely that the line of increased density just above the epiphysis of the lower end of each tibia is due to some metabolic disturbance other than scurvy. Of interest is the fact that the periosteal thickening in the phalanges and metacarpals took place during the last four months of observation. Good roentgenograms of both hands four months before were negative.

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Fees Based on Patient's Income.—The collection of professional fees consistent with the income of the patient is not at the pleasure of any physician whose privilege it may be to attend such a case. The freedom to make such a just charge must reside within the physician himself. It is not so much the service rendered as the position of the physician who renders it, his reputation, his experience, his age, his availability, in other words his inherent power to back up this charge.—P. J. Flagg, *Hosp. Prog.* 3:143 (April) 1922.

THE TREATMENT OF LUPUS VULGARIS WITH SOLUTION OF MERCURIC NITRATE *

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The many methods of treatment that have been advocated for lupus vulgaris testify to the peculiar stubbornness of this disorder. Fortunately, it is rather rare in this country, whereas the large number of sufferers in continental countries has resulted in the development of special lupus institutes. On account of the lack of a true Finsen light apparatus in this country, many patients have gone to London or Copenhagen to get the benefit of the Finsen treatment. Undoubtedly the latter gives the most perfect cosmetic results, but the treatment is prolonged and time-consuming, and is impracticable in extensive cases of lupus involving the nose and adjacent tissues and in ulcerated lesions. Tuberculin as an adjunct to the therapy of tuberculosis of the skin has not come up to expectations.

Regarding the value of roentgen-ray therapy, MacKee [1] has given us a conservative estimate. The results in the hypertrophic and ulcerated types are excellent, but the common atrophic type is exceedingly resistant, especially in the older eruptions with deep-seated nodules. Furthermore, the prolonged use of

Fig. 1.—Appearance of patient on admission to the hospital.

the roentgen ray favors the development of epithelioma in the lupus scar. I have seen a very malignant type of epithelioma develop in a woman, aged 24, who had been irradiated for two years for lupus of the face. A severe roentgen-ray reaction should always

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1. MacKee: X-Rays and Radium in the Treatment of Diseases of the Skin, 1921, p. 443.

be avoided and other methods instituted if improvement has not taken place. The effect of radium has been favorably commented on by a number of observers, but it has the same potential dangers as the roentgen ray, namely, subsequent atrophy and telangiectasia. The so-called selective caustics used alone or preceded by curettage have been used for many years by dermatologists. Heidingsfeld [2] reported favorably on the use of trichloracetic acid. To Adamson [3] of England belongs the credit for advocating the use of the solution of acid nitrate of mercury (Solution of Mercuric Nitrate, N. F., liquor hydrargyri nitratis) in the treatment of lupus vulgaris. After using such caustics as zinc chlorid and pyrogallic acid for many years, he found solution of mercuric nitrate superior in efficacy and rapidity of action to all other

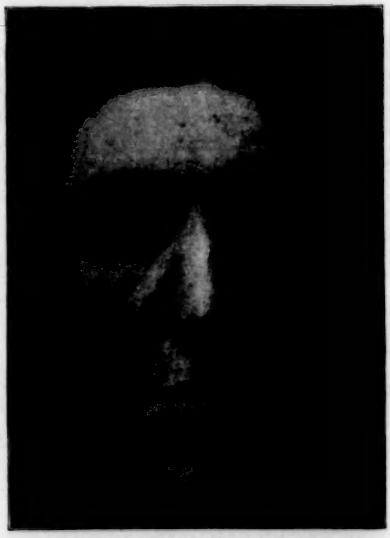

Fig. 2.—Condition at close of treatment.

caustics. During the last year I have been able to corroborate Adamson's findings in six cases of long standing lupus. These had all received preliminary roentgen-ray therapy (usually ½ skin unit every two weeks for three or four doses) without definite improvement, and a successful result was obtained only after applying solution of mercuric nitrate to the individual lesions. The most striking case was the following:

An Italian, aged 21, entered the Cook County Hospital in February, 1921, with an extensive lupus vulgaris involving the tip and alae nasi, the upper lip and lacrimal region with scattered patches on the cheek. The disease began in 1910 on the nose, and gradually spread to the other regions. He was treated in the London Hospital with Finsen light in 1914 for one year, with partial clearing up of the lesions. Two years later there was a recurrence, and since then he had been under treatment in various dispensaries around Chicago. At one time a positive Wassermann reaction was obtained, and antisyphilitic treatment given over a long period, without improvement. In 1917, an injection of tuberculin caused a severe exacerbation.

The condition on admission to the County Hospital is shown in Figure 1. For several months he was given fractional doses of roentgen ray and tuberculin, without improvement. In May, 1921, the local application of solution of mercuric nitrate was begun, the other treatment being discontinued, and after four months the present excellent cosmetic result was attained. When shown at the annual meeting of the Chicago Dermatological Society in January, 1922, there had been no recurrence, and there were no "apple-jelly" nodules visible.

The method of using solution of mercuric nitrate is very simple. By means of a cotton applicator it is painted on the nodules for one to two minutes with firm pressure and allowed to dry. The pain of the application is not severe, and the effect is to change the soft, yellowish nodules to a white opaque appearance. The acid should not be neutralized, and no dressing is necessary. A crust forms which falls off after a week or ten days, leaving the area either healed or with a superficial ulcer which heals rapidly. The remaining scars are smooth and healthy looking. It is best not to use the acid on too large an area at one sitting, and if isolated nodules remain they should be treated again. According to Adamson, the method can also be used in ulcerated lupus and in mucous membrane lesions under local anesthesia. I have found it of particular value in the atrophic type with recurring nodules, of which most of the cases I have treated were examples. In spite of MacKee's warning not to use irritating applications on areas that have been irradiated with roentgen rays, I have not found that unfavorable results take place if an interval of a month is allowed to intervene before applying the acid.

CONCLUSIONS

1. Solution of mercuric nitrate is a simple and effective agent in the treatment of lupus vulgaris.
2. The action of the acid is enhanced by a preliminary course of roentgen-ray therapy.

30 North Michigan Avenue.

2. Heidingsfeld, M. L.: A New Method of Treatment of Lupus Vulgaris, J. A. M. A. 63: 1352 (Oct. 17) 1914.
3. Adamson, H. G.: Brit. M. J. 2: 123 (July 24) 1920.

A NEGLECTED FEATURE OF THE MECHANICS OF MITRAL STENOSIS*

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The auscultatory phenomena of mitral stenosis, particularly the crescendo murmur and so-called presystolic thrill, are so striking that their explanation has long provoked special interest and discussion. There has been a division of opinion as to whether this murmur and thrill are of auricular or ventricular origin. Thomas Lewis,[1] among others, has attempted to show that the time of occurrence is prior to ventricular systole, and that the sounds must therefore be due to auricular systole. In his records, while most of the sound is diastolic, a part of it—a very forcible part—appears, to my eyes, to come in early systole. But no adherent of this view seems to have given an adequate explanation of the mechanics involved, or to have shown how the auricular contraction acting on a

* From the Laboratory of Applied Physiology, Yale University.
1. Lewis, Thomas: Heart 4: 221, 1913.

stenosed valve produces such a sound and vibration. Hirschfelder's [2] conception of the snap seems to be most nearly mechanically feasible, if it is valid chronologically.

On the contrary, a number of writers, of whom Hart [3] and Reid [4] may be mentioned as bringing forward evidence and conceptions germane to the topic of this paper, have held that the impression gained by the ear of the listener, that the event in question is prior to ventricular systole, is misleading. They hold that it occurs "before the systolic sound but not before the beginning of (ventricular) contraction," as Reid puts it. If this view is justified clinically, there is still a need for a mechanically feasible conception of how ventricular contraction acting on a stenosed mitral valve may produce the characteristic murmur and thrill.

It happens that about ten years ago I had an opportunity to make observations by a special method which show a factor in the mechanics of a stenosed mitral valve not usually considered. The observations may help toward an explanation of the thrill. Unfortunately, no opportunity to repeat the observations has occurred, or is likely now to occur; but even this single observation may be reported, since it conforms closely to the general view which Hart, Reid and other adherents of the ventricular origin of the sound, and particularly the thrill, have developed, and since this laboratory observation is complementary to their clinical data. The description of the method employed, it is to be hoped, may stimulate others to repeat, or at least to test the correctness and generality of my observations.

MOVEMENTS OF NORMAL VALVES

Dr. F. E. Johnson and I [5] were then studying the movements of normal heart valves. In particular, we cut out preparations of the mitral and tricuspid valves from ox hearts and mounted them so that the ostium and the supporting ring of the valve were held against the end of a wide glass tube. The papillary muscles were stitched to a wire frame, 2 or 3 cm. from the end of the tube, so that the valve flaps were supported in practically normal relation and working position. The lower end of the glass tube bearing this preparation was immersed in a glass jar of clear water. A stream of water was allowed to flow down through the tube, then stopped; and a backpressure induced.

The movements of the flaps were meanwhile photographed, and showed clearly the features of the normal valvular movements. These consisted in an inrolling of the flaps to a position of approximation whenever the onflow of the current ceased with some suddenness. We showed that this movement was due to the lateral inflow back of the "breaking jet," as we expressed it. Accordingly, when a back pressure was developed a moment later, as it would be during ventricular systole, it merely completed the closure of the already approximated flaps, but caused no appreciable back lash or throw of the valve. This was natural enough in the tricuspid, in which the three main flaps are nearly alike and are equally supported on the muscular ring of the ostium. But in the mitral valve the larger flap forms an extension of the nonmuscular partition between the auricle and the part of the ventricule leading up to the semilunar valves and aorta. This flap is so large that a certain amount of sag and consequent back lash would almost be expected to occur at the onset of ventricular systole. However, we were led to the conclusion that in the normal heart, owing to the action of the "breaking jet" and the inrolling movement thus induced at the end of auricular systole, even this large flap is swung so nearly into position that when ventricular systole occurs no slack exists to allow back lash toward the auricle under the force of the ventricular impulse. These results have been checked by Dean,[6] working with Wiggers.[7] They draw a distinction between "approximation" of the flaps and "closure." But this seems so much a play on words that this formal criticism is virtually confirmation; and in order to avoid merely verbal disagreement, I have here virtually adopted their phraseology.

MOVEMENTS OF A STENOSED VALVE

If, however, the flaps along the greater part of their edges were attached to each other, leaving only a small orifice, the breaking jet and inrolling action of the flaps could not occur. Under such conditions the valve, and particularly the large flap of the mitral valve, forms a baggy funnel which, after being pushed down toward the ventricle during auricular systole, must inevitably be subject to a considerable back lash or upthrow toward the auricle, at the onset of ventricular contraction. Since the valve must be brought taut before any pressure in the ventricle sufficient to allow a discharge of blood into the aorta can occur, this throw and terminal jerk of the baggy funnel as it comes taut must produce a snapping or rumbling sound. When a small paper bag is held over one's mouth and inflated with the breath, it produces such a sound as the walls come taut. If this is correct, the crescendo murmur would occur exactly at the instant that Reid, Hart and others holding similar views have placed it. These considerations will be seen to be in accord with the following observations.

REPORT OF CASE

A woman, aged 40, of medium size, presented a quite typical case of mitral stenosis. Over the apex of the heart in the fourth intercostal space a distinct thrill could be felt. As judged by the radial or carotid pulse, it was presystolic. On auscultation a harsh, loud thud was heard at this time. At necropsy the heart weighed 360 gm. It was fortunately obtained before all of those cuts had been made by which a heart from necropsy is usually rendered useless for any study of valvular mechanics. The pulmonic orifice measured 7 cm. in circumference, the aortic 7 and the tricuspid 12.5, while the mitral was a mere slit 1 cm. in diameter and less than 3 cm. along its edges. It barely admitted the tip of the little finger. The calculated area of the opening was only a tenth of the normal. For the opportunity to make this report and the following observations, I am indebted to Dr. C. J. Bartlett.

In preparation for our observations, the left auricle was opened so that it could be tied over the end of a glass tube 5 cm. in diameter, as in our experiments with valves from ox hearts. The ventricle was opened, so that the entire mitral valve could be clearly seen, but the papillary muscles were not cut. The chordae tendineae were intact, and the valve could function virtually as during life. The preparation was immersed

2. Hirschfelder, A. D.: Bull. Johns Hopkins Hosp. **19**: 319, 1908; Diseases of the Heart and Aorta, Ed. 1, Philadelphia, J. B. Lippincott Company, 1910, pp. 341-359.
3. Hart, T. S.: M. Rec. **80**: 2 (July 1) 1911.
4. Reid, W. D.: The First Heart Sound and the Presystolic Murmur, J. A. M. A. **76**: 432 (Feb. 12) 1921; The Auricular Heart Sounds, ibid. **76**: 928 (April 2) 1921; The So-Called Presystolic Murmur, ibid. **77**: 1648 (Nov. 19) 1921.
5. Henderson, Yandell, and Johnson, F. E.: Heart **4**: 69, 1912.
6. Dean, A. L.: Am. J. Physiol. **40**: 206 (April) 1916.
7. Wiggers, C. J.: Present Status of Cardiodynamic Studies on Normal and Pathologic Hearts, Arch. Int. Med. **27**: 475 (April) 1921.

in a jar of water exactly as in our previous experiments.

The mitral flaps had adhered at their edges so that the larger flap formed a partition with a great amount of sag or slack between the auricle and ventricle. In order to measure the amount of this sag, the opening of the valve was stoppered with a bit of absorbent cotton coated with petrolatum. Only a slight additional deformation was thus induced. Water was then poured into the large glass tube on which the preparation was mounted until it stood 2 or 3 cm. higher within the tube than in the tank in which the valve was immersed. This was a sufficient auricular pressure to cause the fused mitral flaps to bulge downward. The level of the water within the tube was marked on its side by a scratch with a diamond point. Then the tube and preparation were lowered 10 or 15 cm. into the tank. The mitral partition was thus subjected to a sufficient ventricular pressure to cause it to bulge upward. As a result of this change in the position of the partition, the water within the tube now stood considerably above the diamond scratch, although, of course, below the level of the water in the tank. The new level within the tube was also marked with a diamond scratch. The tube was then calibrated so as to give the volume which would fill it from one mark to the other. This proved to be 80 c.c.

The meaning of this measurement is that the left ventricle of this heart had to expand in diastole 80 c.c. before any blood would enter its chamber. Until it had expanded to this amount, no difference of pressure sufficient to cause blood to pass through the mitral orifice could occur. The valve would merely move downward until brought taut. In the same way at the onset of systole, the ventricle would have to contract by 80 c.c. before the valve was pushed upward and made taut. Until it had been brought into this position, the contraction of the ventricle could not produce any pressure that would be adequate to cause a discharge of blood through the semilunar valves into the aorta. Thus, for the left ventricle to make a systolic discharge into the arterial system of A c.c. of blood, whatever the amount A might be, 20, 40 or 60 c.c., it would have to make a stroke of A plus 80, or of respectively $20 + 80 = 100$, or $40 + 80 = 120$, or $60 + 80 = 140$. Obviously, the loss of efficiency in the pumping action of the left ventricle, through the wasted motion of the baggy valve swinging back and forth with each alternation of phase, would be very large. Indeed, in this particular heart, it may well have been the principal mechanical defect. These points are illustrated by the accompanying (diagrammatic) representations of a heart (A) with a stenosed and funnel shaped mitral valve in the diastolic position, and (B) in the systolic position, compared with (C) the positions and movements of a normal valve.

A, Heart in diastole, with the baggy mitral funnel extending downward into the ventricular chamber. *B*, A ventricular contraction of 80 c.c. has merely pushed the valve taut, without as yet causing any discharge into the aorta; at the onset of the succeeding diastole, the ventricle must relax by 80 c.c., and allow the bag to move downward by this volume, before any appreciable inflow from the auricle can occur. *C*, A heart with a normal mitral valve; (*a*) in the diastolic position; (*b*) inrolling of flaps during the interval after auricular and before ventricular systole; (*c*) systolic position of valve.

DECREASED VOLUME OF STROKE

An attempt was made to estimate what the volume represented above by A, that is, the tidal volume or systolic discharge, might have been. It certainly could not have been more than the amount of blood which would flow through the constricted mitral orifice during the period of a diastole under a head equal to the difference between the pressures in the auricle and ventricle. Normally this pressure is not much greater than that of a column of blood, or water, 5 cm. high. For experimental purposes and as a basis for a rough estimate, it was assumed that in this heart, owing to the obstruction of the stenosis, the blood was dammed back in the auricle and pulmonary veins to the relatively enormous pressure of 15 cm. Accordingly, with the valve mounted as described, a stream of water was allowed to flow into the glass tube tied into the left auricle until the level of water in the tube was just maintained 15 cm. higher than in the tank in which the preparation was immersed. It was found that a stream of only 52 c.c. per second was necessary to maintain this difference in level. In other words, 52 c.c. per second flowed through the stenosed valve under a head of 15 cm.

Taking the duration of diastole as 0.5 second, it follows that 26 c.c. would, on this assumption, be the utmost volume that could enter the ventricle during each period of refilling. This would then be all that on the average could be discharged by a systole. Indeed, it is probable that the amount was actually somewhat less, for blood is more viscid than water, and a head of 15 cm. of water or blood may have been more than the pressure in the pulmonary veins.

In a normal human being of the size of this woman, the systolic discharge of the left ventricle at each heart beat is probably about 60 c.c. In this case, however, on the foregoing showing it was reduced to less than 26 c.c. In the normal subject the greater part of the ventricular refilling takes place in the first 0.2 second of diastole. In this subject, however, the passage of blood through the stenosed valve was necessarily so slow that it would require the whole of a ventricular diastole of 0.5 second for 26 c.c. to enter the left ventricle. In such a heart, if the rate of beat were increased by any physical exertion, the shortening of diastole would reduce proportionately the volume of blood which the ventricle could receive during each diastole or discharge during the succeeding systole. At each beat, in order to make a discharge of this amount, it would have to employ an amplitude of stroke 80 c.c. greater, or a total of 106 c.c. in order to take up the slack and lost motion of the baggy mitral funnel.

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PRODUCTION OF THRILL AND RUMBLE

Particular attention was paid to the production of sounds by this valve working as described above under fairly realistic mechanical conditions. It was found that a very distinct thud or rumble was produced whenever the valve was suddenly and forcibly brought taut. This was particularly the case when the valve was thrown into the systolic position.

This fact may have a bearing on the so-called presystolic occurrence of the crescendo murmur. In the normal heart it is well established that there is a very brief interval at the onset of ventricular contraction during which all four valves of the heart are closed. The mitral and tricuspid are firmly shut at the very first instant of ventricular systole, but pressures equal to those in the pulmonary artery and the aorta must be developed by the contracting muscle before the semilunar valves are thrown open. The perfection of action of the normal valves is such that no appreciable back lash or lost motion occurs, and this interval is therefore extremely brief. During this period the intraventricular curve, as all observers have found, rises very steeply.

In the heart under consideration, however, it was necessary for the musculature of the left ventricle to effect a contraction corresponding to 80 c.c. during this period, and this would necessarily occupy a certain amount of time. The whole of the interval would properly be counted as falling within the systolic period; but it would not be appreciated by the clinical observer as being systolic, since none of the ordinary signs of systole would as yet have occurred. It is true that the bringing taut of the mitral valve and its rumble would occur toward the end of this abnormal period; but the left ventricle would require an appreciable further (normal) period to develop the pressure that is necessary to induce the discharge of blood into the aorta.

In technical physiologic terms, the ventricle normally contracts at first isometrically, and then isotonically; but this heart, owing to the slack of the mitral valve, contracted at first almost without load or resistance, that is, isotonically, then isometrically, and finally at the end, during the discharge into the aorta, isotonically.

Even if no real leak occurred—as is believed common under this condition—the mechanical effect of the back throw of the bag and its contents, in this case 80 c.c. of blood, is similar to that of a regurgitation of this volume.

SUMMARY

Observations by in vitro experimentation on the heart of a patient with mitral stenosis disclosed that the back lash of the baggy funnel formed of the fused flaps amounted to 80 c.c. This lost motion was probably an important factor in diminishing the mechanical efficiency of this heart. Its effect, combined with the comparatively small amount of blood that could pass through the stenosed orifice during diastole, is calculated to have been such that, in order to discharge (say) 26 c.c. of blood into the aorta, the left ventricle would have to make a stroke of an amplitude greater than 100 c.c.

Before ventricular systole could effect any discharge into the aorta, the baggy funnel had to be made taut. It is suggested that this sudden throw and tightening of the previously slack partition is the cause of the thrill and rumble characteristic of mitral stenosis.

Clinical Notes, Suggestions, and New Instruments

ACUTE DEGENERATION OF A UTERINE LEIOMYOFIBROMA COMPLICATING THE PUERPERIUM

A. F. SPURNEY, M.D., AND PAUL M. SPURNEY, M.D., CLEVELAND

Interest in the acute degeneration of uterine fibroids, complicating pregnancy and the puerperium, was aroused by the following case:

Mrs. A. B. S., aged 31, primipara, who entered St. Luke's Hospital, May 23, 1921, pregnant, full term, and in labor, was delivered, May 24, by Dr. A. J. Skeel, of a healthy boy in a normal labor. The patient was known to have had a small tumor the size of a walnut in the uterine funds at the beginning of pregnancy, which had enlarged to the size of a grapefruit at term. The tumor caused no difficulty during labor.

Ten days after delivery, and without previous discomfort, the patient complained of severe low abdominal pain, and low backache. There was no elevation of temperature; the pulse was slightly accelerated; the white blood corpuscles numbered 16,850. The urine was practically normal. Examination of the pelvis revealed the tumor of the uterine fundus enlarged and very tender; no other pathologic condition was demonstrable.

Pain became more severe during the day and night, with a slight elevation of temperature. The pulse was slightly accelerated. As the patient's condition was not improved the next morning, operation was decided on. A questionable preoperative diagnosis of degeneration of the fibroid was made.

June 4, a low midline, abdominal incision was made. Examination revealed nothing abnormal except a puerperal uterus with a large intramural fibroid in the posterior fundus. Supravaginal hysterectomy was performed, and the abdomen was closed. The patient was put to bed in good condition. Convalescence was normal; the patient was discharged, June 21. At present she is in perfect health.

PATHOLOGY

The large, soft uterus, of the early days of the puerperium, contained a large, discrete, intramural tumor the size of a grapefruit in the posterior wall of the fundus, with two small nodules, the size of marbles, on the anterior wall. The cut surface of the small tumors showed leiomyofibromas of no special pathologic interest. The cut surface of the large tumor had a diffuse red color, in marked contrast to the lighter color of the uterus; the cut edge bulged and appeared very edematous.

Microscopically, the tumor proved to be a leiomyofibroma; it showed bundles of interlacing fibers, with a play of shades owing to the various planes at which the strands of cells were cut. There were foci of early degeneration and necrosis, with diffuse edema and hemorrhage into the tumor; inflammatory reaction was shown by the presence of lymphocytic cells. Many well formed blood vessels were seen showing thrombosis.

This pathologic picture is undoubtedly at that particular stage called "red degeneration" of fibroids. "Red degeneration" is aptly defined in the literature as an aseptic, necrobiotic process with hemolysis and autolysis of tissue. But it should be rembered that this condition may proceed to marked necrosis, gangrene and even suppuration, the latter being due to the invasion of organisms from the blood stream. The term "red degeneration" is misleading, being but a very gross term of the condition, and only a step in the pathologic process.

The cause of this condition is undoubtedly, as expressed in a personal communication from Dr. A. S. Warthin: "The condition is undoubtedly due to pressure on the in and out flowing vessels of the tumor, or to the thrombosis in these vessels. Such a thrombosis could be secondary to such a pressure. This could be brought about by a contraction of the uterus itself following labor, or may take place as a result of contractions of the uterus, secondary to the presence of the tumor. The blood supply of uterine fibromas is often

very limited, particularly when they are well encapsulated from the surrounding uterine wall, so that the nutrition of the growth could be easily disturbed by compression of these vessels."

One article in the literature may assist in explaining this view. The article states that uterine fibroids during pregnancy lie very loosely in their capsules, and so a slight shift in the position of the tumor may cut off of the ingoing and outgoing vessels. Such mechanical causes seem much more rational than to ascribe the pathologic condition to the various toxins, such as lipoids, for which there is no sound basis.

The diagnosis of such a condition should be simple, provided a growing fibroid is recognized during pregnancy. A severe, acute, lower abdominal pain, often extending to the back, without marked rise in temperature, and with moderate acceleration of pulse, is symptomatic. Examination will reveal the presence of an enlarged, tender mass in the uterine body. The leukocyte count at this time is of no importance.

403 Osborn Building.

INFESTATION BY BROAD TAPEWORM

J. C. Wallace, M.D., and Margaret Grant, M.D., Fort Wayne, Ind.

Calvin[1] recently reported the finding of the broad tapeworm in native-born patients in Chicago. A similar case from Indiana should prove of interest:

Mrs. C. B., aged 25, born in Decatur, Ind., of German parents, lived in Decatur until four and one-half years ago, since which time she has lived in Fort Wayne. Her father occasionally received whitefish, bass and pickerel from Sandusky, Ohio. Commencing about eight years ago, the patient has occasionally eaten a little raw, as well as cooked fish. Following the birth of a child in 1918, she was conscious of strange movements in the abdomen, and a short time later she passed 18 feet of worm. Nothing appeared since, till in the early part of October, 1921, when she passed three sections of worm, each from 12 to 18 inches in length.

Dr. Margaret Grant examined the segments and reported that they showed the characteristics of *Bothriocephalus latus*, and that the ova were characteristic of that species. Blood examination, Oct. 8, 1921, revealed: hemoglobin, 85 per cent. (Tallqvist); erythrocytes, 4,025,000; leukocytes, 7,150; polymorphonuclears, 49 per cent.; lymphocytes, 43 per cent.; large mononuclears, 7 per cent.; basophils, 1 per cent. About four months later a stool examination did not reveal any ova.

The patient was given a thorough cleaning out with magnesium sulphate, and oleoresin of aspidium and kamala were administered. In four hours a little more than 7 feet of worm was passed. Owing to lack of cooperation on the part of the family, it was impossible to find out whether the head was passed, but the portion was narrowed down to very small segments.

People's Trust Building.

QUADRUPLE PREGNANCY

Harry French Thompson, M.D., Forest City, Iowa

Mrs. O., aged 35, the mother of six living children, all of single birth, was delivered of her first child in 1906 and of the second in 1908. The attending physician told her that the placenta was a twin placenta, but that there was but one child. In 1909 she had a miscarriage at six and one-half months, a placenta praevia. The other children were born in 1910, 1912, 1914 and 1916. The last day of her last menstruation was Sept. 24, 1921. Subsequent to this, she felt all the time as if she was about to menstruate, but nothing other than a miserable feeling happened until December 20, when she felt very well for three days, and then suddenly began to have a slimy, bloody discharge, which kept up until December 28, when for the first time there were severe pains, which continued until December 30. December 31, the pains recurred, and on the morning of Jan. 1, 1922, the patient had a miscarriage, and passed two fetuses, one free and the other still enclosed in the membranes. The patient was again free from pain until January 12, when she had pains all night, but in the morning felt well enough to be up, and at 10 o'clock passed another fetus. She remained in bed until January 16, when she resumed her household duties. January 28, she began to flow again, and thought it was her regular menstrual period. The flow kept up for two days and again stopped until February 3, when there was a bloody discharge for two days, which then became rather slimy until February 9, when the flow was free for two days. February 11, severe pains came on, and the flow stopped. I then saw the patient, and, about 7 that evening, delivered another fetus. The placenta did not come away readily, and I made an attempt to deliver it manually, but decided to pack the vagina and wait until later, hoping for a spontaneous delivery. This occurred the next morning at about 5:30.

At no time during the entire period, from the time of the first discharge to February 11, did the patient have any symptoms indicative of the absorption of toxins. There was at no time any unnatural odor to the flow, nor did she have any fever or chills. The babies delivered January 1 were described as being what one would expect at three months; that of January 13 was described as about the same size, and white. The one which I delivered, February 11, was the size one would expect at from eighteen to twenty weeks, and showed no indication of decomposition. The uterus had been steadily growing larger, and the patient thought she felt slight movements, February 9.

In going over the family history, I find that a father's sister gave birth to dead twins at eight months, and a mother's cousin miscarried at six months, a twin pregnancy. No other twin pregnancies were discoverable.

NEEDLE IN POSTERIOR WALL OF HYPOPHARYNX FOR SIX WEEKS

Rubic N. Smith, M.D., and Harry P. Price, M.D., Tulsa, Okla.

A well developed and well nourished white man, aged 45, at noon time, Nov. 5, 1921, was eating grape pie, when he noticed something sticking in his throat. He coughed and gagged, but the sticking persisted. After finishing work about 3 o'clock he reported to a physician. Roentgenoscopy revealed a foreign body, and under local anesthesia attempts at removal were made. Sixteen days later, under a general anesthetic, attempts at removal were again unsuccessful. The patient stated that he was in bed two days following this operation.

I saw the patient, December 4. The facial appearance was apparently normal. There was no difficulty or pain on swallowing. When pressure was made on the left side of the neck about the level of the thyroid cartilage, some sensation was produced. Turning the head to the left, and swallowing a large bolus of food produced sensation in the same area. Indirect examination failed to detect inflammation of the pharynx and larynx. The structures of the larynx seemed to function normally. A roentgen-ray examination revealed a needle lying in the horizontal plane, in front of the lower part of the body of the fourth cervical vertebra. The point of the needle was directed toward the left. At the hospital, without an anesthetic, a Jackson esophageal speculum was introduced and the hypopharynx and upper esophagus were explored. No foreign body could be found. In the region of the fourth and fifth cervical vertebrae the posterior wall was nodular and showed scar tissue.

Next day, under a general anesthesia, the patient's head was suspended on a Killian suspension apparatus. A Jackson esophageal speculum failed to disclose a foreign body. In the area of the body of the fourth cervical vertebra, an incision was made in the vertical axis in the midline of the posterior wall of the hypopharynx. The knife struck something hard. The incision was deepened, and the presence of the foreign body lying in the horizonal axis was definitely determined. Gentle traction with forceps caused the foreign body to break. The piece in the grasp of the forceps was removed. The forceps were again inserted, and the remainder of the foreign body withdrawn. Argyrol solution was applied to the wound.

An incision in the vertical axis, over the body of the cervical vertebra, about an inch long, had been made. The foreign body was about 3 mm. below the surface of tissue, being about the same depth throughout its extent. The next day the

1. Calvin, J. K.: Native Infestation by the Broad Tapeworm, Diphyllobothrium Latum, J. A. M. A. 78:84 (Jan. 14) 1922.

patient's temperature was normal and he was permitted to leave the hospital. On the last report his throat was normal and he had returned to work.

506 Palace Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

QUINIDINE

Quinidine is obtained from cinchona bark as a by-product in the manufacture of quinine, to which it is closely related, being the stereoisomer of quinine.

Actions and Uses.—Quinidine, like quinine, is a protoplasm poison. It affects protozoa more than bacteria but less powerfully than quinine. At one time it was used, to some extent, as a substitute for quinine because it was then much the cheaper preparation.

Quinidine acts upon the heart in such a manner as to bring about cessation of fibrillation of the auricles in a certain proportion of instances. Quinidine and other cinchona alkaloids, are the only drugs known to have this specific effect. The pharmacology of the drug has not been thoroughly investigated; but it is probable that quinidine increases the refractory period of auricular muscle and decreases its irritability and the rate of conductivity. In large doses in the isolated hearts of rabbits, it slows the heart rate and causes paralysis of the auricle; shortens the auricular-ventricular conduction time, and results finally in paralysis of the ventricle. Quinidine is used to restore the normal rhythm of the heart in cases of auricular fibrillation. This has been brought about in approximately 50 per cent. of the reported cases in which the drug has been used. It is apparently most efficacious in the cases of fibrillation of short duration or of the paroxysmal type. It may also stop fibrillation of several years' duration. It is least effective in cases of fibrillation with marked cardiac insufficiency. Quinidine is not without some unpleasant and even dangerous effects. Some patients appear much more susceptible to its toxication than others. The untoward symptoms brought about by its use in these patients are nausea, vomiting, convulsions, palpitation, headache, faintness and flushing. In most cases following the administration of the drug, the pulse increases in rapidity before the normal rhythm is established. In some cases the effect of the drug is restricted to this alteration of rhythm. In a few instances, such serious results as rapid idioventricular rhythms (ventricular tachycardia) have been initiated during the course of therapy. Toxic effects may appear after the establishment of a normal rhythm. Some cases have been reported in which sudden death occurred a short time after the drug had been stopped. The effect of the drug is not known to be permanent; but the normal rhythm, when once established through the action of quinidine, may last from a few days to several months.

Dosage.—Quinidine is generally administered as quinidine sulphate. Commonly 0.2 Gm. (3 grains) of quinidine sulphate is given as a preliminary dose and is repeated after two hours to determine the patient's susceptibility to the drug. If there are no symptoms following this preliminary dose, therapeutic administration is begun on the following day when from 0.2 Gm. to 0.4 Gm. (3 to 6 grains) is given from three to five times daily, for one to three days. As a rule, if the establishment of the normal rhythm can be effected, the change occurs after from one to three days' treatment. The maximum dose per day advised by most authors is from 1 to 2 Gm. (15-30 grains). If toxic symptoms occur, the administration of the drug should be discontinued.

QUINIDINE.—Quinidina.—An alkaloid, $C_{20}H_{24}O_2N_2+2H_2O$, obtained from the bark of various species of *Cinchona*.

Actions and Uses.—See general article, Quinidine.

Dosage.—See general article, Quinidine.

Quinidine occurs in white crystals or as an amorphous, white powder; odorless; taste intensely bitter and persistent; efflorescent in dry air.

Quinidine is very slightly soluble in water; soluble in alcohol and ether; freely soluble in chloroform; very slightly soluble in petroleum benzin.

The aqueous solution of quinidine is alkaline to litmus and its alcoholic solution is dextrorotatory. A solution of quinidine in diluted sulphuric acid (1: 1,000) shows a strong blue fluorescence.

Quinidine loses its water of hydration at 100 C. The dried alkaloid melts at about 168 C.

Add a few drops of bromine water to 10 Cc. of an aqueous solution of quinidine (1: 1,000), prepared with just sufficient diluted sulphuric acid to produce complete solution, and follow with ammonia water in slight excess. The liquid acquires an emerald-green color.

Dissolve about 0.1 Gm. of quinidine in 15 Cc. of hot water containing a few drops of diluted sulphuric acid; cool the solution; add 1 Cc. of silver nitrate solution and stir the mixture with a glass rod. A white, crystalline precipitate forms after a short interval (*distinction from many other alkaloids*).

Dissolve about 0.1 Gm. of quinidine in 10 Cc. of warm water, containing a slight excess of diluted hydrochloric acid; add an excess of potassium iodide solution and agitate. An orange yellow, crystalline precipitate forms after an interval (*distinction from quinine*).

Dissolve 0.5 Gm. of quinidine in 15 Cc. of boiling distilled water, with just enough sulphuric acid to form a solution neutral to litmus paper, and add 5 Cc. of potassium iodide solution. Agitate the mixture gently; cool it to 15 C., and keep it at this temperature for one hour, with occasional stirring. A white precipitate is formed (*difference from quinine*). Filter out the precipitate and add 2 drops of ammonia water to the filtrate; not more than a slight turbidity results (*limit of other cinchona alkaloids*). Care must be taken to have the liquid perfectly neutral after the addition of the potassium iodide solution; if slightly acid, very dilute ammonia water must be added, drop by drop, with constant stirring until exact neutrality to litmus is attained.

A solution of about 0.1 Gm. of quinidine in 5 Cc. of sulphuric acid is not darker than pale yellow (*organic impurities*).

Incinerate about 1 Gm. of quinidine, accurately weighed. The ash does not exceed 0.1 per cent.

Dry about 1 Gm. of quinidine, accurately weighed, to constant weight at 100 C. The loss does not exceed 11 per cent.

Quinidine-P. W. R.—A brand of quinidine-N. N. R.

Manufactured by Powers-Weightman-Rosengarten Company, Philadelphia. No U. S. patent or trademark.

Quinidine-N. Y. Q.—A brand of quinidine-N. N. R.

Manufactured by the New York Quinine and Chemical Works, New York. No U. S. patent or trademark.

Quinidine-M. C. W.—A brand of quinidine-N. N. R.

Mallinckrodt Chemical Works, St. Louis, distributor. No U. S. patent or trademark.

QUINIDINE SULPHATE.—Quinidinae Sulphas.—$(C_{20}H_{24}O_2N_2)_2.H_2SO_4+2H_2O$.—The sulphate of quinidine.

Actions and Uses.—See general article, Quinidine.

Dosage.—See general article, Quinidine. Quinidine sulphate may be administered in the form of cachets, capsules, pills or tablets.

Quinidine sulphate occurs as minute, silky, white crystals, usually cohering in tufted masses; odorless; taste very bitter and persistent; permanent in the air. On exposure to light, it acquires a brownish tint.

Quinidine sulphate is soluble in water, alcohol and chloroform; very slightly soluble in ether.

The saturated aqueous solution of quinidine sulphate is faintly alkaline to litmus and is dextrorotatory.

Dissolve about 0.01 Gm. of quinidine sulphate in 10 Cc. of water; add a few drops of bromine water to the solution, and follow with ammonia water in slight excess. The liquid acquires an emerald-green color.

The aqueous solution gives a white precipitate with barium chloride solution which is insoluble in hydrochloric acid.

Quinidine sulphate loses its water of hydration (4.63 per cent.) at 100 C.; but the dried salt reabsorbs it on exposure to moist air.

To about 5 Cc. of a saturated, aqueous solution of quinidine sulphate, add 1 Cc. of silver nitrate solution and stir the mixture with a glass rod. A white, crystalline precipitate forms after a short interval (*distinction from the salts of many other alkaloids*).

Dissolve 0.5 Gm. of quinidine sulphate in 15 Cc. of boiling water and add 5 Cc. of potassium iodide solution; agitate the mixture slightly; cool it to 15 C., and keep it at this temperature for one hour, with occasional stirring. A white precipitate is formed (*difference from quinine*). Filter out the precipitate and add 2 drops of ammonia water to the filtrate; not more than a slight turbidity results (*limit of other cinchona alkaloids*).

A solution of about 0.1 Gm. of quinidine sulphate in 5 Cc. of sulphuric acid is not darker than pale yellow (*organic impurities*).

Incinerate about 0.5 Gm. of quinidine sulphate, accurately weighed; the ash does not exceed 0.1 per cent.

Dry about 1 Gm. of quinidine sulphate, accurately weighed, to constant weight at 100 C.; the loss does not exceed 5 per cent.

Quinidine Sulphate-P. W. R.—A brand of quinidine sulphate-N. N. R.

Manufactured by Powers-Weightman-Rosengarten Company, Philadelphia. No U. S. patent or trademark.

Quinidine Sulphate-N. Y. Q.—A brand of quinidine sulphate-N. N. R.

Manufactured by the New York Quinine and Chemical Works, New York. No U. S. patent or trademark.

Quinidine Sulphate-M. C. W.—A brand of quinidine sulphate-N. N. R.

Mallinckrodt Chemical Works, St. Louis, distributor. No U. S. patent or trademark.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Six dollars per annum in advance

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SATURDAY, APRIL 8, 1922

BEHAVIOR OF HYDROGEN SULPHID IN THE BODY

Hydrogen sulphid bears the reputation of being a decidedly toxic compound. Aside from its occasional occurrence as an occluded gas in coal seams and in mines, it is produced by decomposition of pyrites in the presence of moisture. Although the opportunities for poisoning with hydrogen sulphid in the industries are not very abundant, it must be recalled that the substance is an extremely common component of intestinal gases arising from the putrefaction of proteins in the lower bowel. From this source, therefore, there is furnished repeated opportunity for the absorption of the gas. Although it must be admitted that the quantities available at one time are not large, nevertheless the possibility of some sort of cumulative action needs to be reckoned with.

According to Wells,[1] as much as 66 mg. (1 grain) of hydrogen sulphid may be present in each hundred grams (1,543 grains) of normal colon contents, and there have been reports of alleged intoxication with hydrogen sulphid of intestinal origin. The term "enterogenous cyanosis" has been applied to conditions in which a compound of hemoglobin with hydrogen sulphid assumed to come from intestinal putrefaction has been encountered. Sulphemoglobinemia and also sulphemoglobinuria have been described as existing under such circumstances. It has not taken long for these expressions to become traditional in medical literature, and for the conventional descriptions to be handed down in the successive editions of popular textbooks. Scientific evidence, however, indicates that although sulphemoglobinemia, first described by Van den Bergh[2] in 1905, at times really exists, the formation of the new blood pigment derivative is an indirect result rather than a direct outcome of the absorption of hydrogen sulphid. Under ordinary circumstances the concentrations of this gas required to force a union between it and hemoglobin are far higher than those that would be instantly fatal if inspired. When, however, the oxyhemoglobin of the blood becomes reduced through the presence of strong reducing agents, a mere trace of hydrogen sulphid, such as might be derived from the intestinal tract, then suffices to form sulphemoglobin with the reduced pigment.

This view is substantiated by recent investigations of Haggard[3] at Yale University. He asserts that, within the body of a healthy person, complete reduction of the blood would be essential before any combination of the gas with hemoglobin could occur. In his own experiments it was shown that, when an atmosphere containing hydrogen sulphid is inhaled, no combination of the gas with the hemoglobin of the blood is formed, nor is any appreciable amount of sodium sulphid formed in the blood plasma. According to Haggard, the latter, in the presence of oxygen, possesses the property of rapidly oxidizing hydrogen sulphid. The products of oxidation combine in part with the sodium of the plasma. After inhalation of hydrogen sulphid, it exists in the blood dissolved and unoxidized at first. Alkali sulphids also liberate the compound. The rate of oxidation of hydrogen sulphid in the blood is such that in a comparatively short period many times the lethal amount of sodium sulphid may be administered intravenously to animals without any apparent effect. This explains the comparatively slight toxic properties exhibited by the absorption of sulphids from the intestinal tract; for the concentration of hydrogen sulphid dissolved in the blood can be maintained only by the continued inhalation of the gas. When the inhalation ceases, the hydrogen sulphid present in the blood is rapidly and completely destroyed. This chemical process, as Haggard finally points out, corresponds with the prompt recovery of man on removal from the atmosphere of hydrogen sulphid.

1. Wells, H. G.: Chemical Pathology, Philadelphia, 1920, p. 590.
2. Van den Bergh: Deutsch. Arch. f. klin. Med. 83:86, 1905.
3. Haggard, H. W.: The Fate of Sulfides in the Blood, J. Biol. Chem. 45:519 (Dec.) 1921.

PROTEIN FEEDING IN TUBERCULOSIS

Rest, abundant feeding and plenty of fresh air are the simple defensive weapons that have won even popular acclaim in the fight against the ravages of tuberculosis when once it has gained a foothold. With respect to the food factor, in the therapy of the tuberculous there has been considerable difference in both opinion and practice. There have been advocates of high protein diets, of diets high in fat, and of a regimen rich in both of these types of foodstuffs. Obviously, a correct judgment on some of the problems here raised will depend on the peculiarities of the metabolism characteristic of the disease. If there is, in truth, an excessive "consumption" of the body, as the popular name for the disease implies, the continual losses must be made good; otherwise, a nutritive disaster is certain to be added to the other misfortunes of the patients. Furthermore, if there is a peculiar wear and tear of the active tissues, such as the glandular and muscular

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structures, so that the protein breakdown in particular is accelerated and higher than occurs in the normal person, the feeding of liberal amounts of protein in the diet would find a special scientific justification.

Evidently the facts regarding the nutritive exchanges in the tuberculous need to be known accurately if the problem of their optimal nutrition is to be approached with intelligent appreciation. In particular, it is important to learn whether the so-called "toxic destruction" of protein assumed in certain febrile conditions occurs in tuberculosis. A febrile rise in body temperature does not of itself lead to undue protein catabolism, provided an adequate supply of energy is offered in the form of nonprotein foods, notably carbohydrates.[1] Febrile inanition is of more serious consequence.

Working with tuberculous patients at Bellevue Hospital, McCann[2] of the Russell Sage Institute of Pathology has found that high protein intakes are by no means called for. In some cases he reports it possible to maintain nitrogen balance, and even to retain nitrogen, when from 37 to 44 gm. (571 to 679 grains) of protein each day are ingested, of which about one half is from animal sources. The attainment of nitrogen equilibrium with such a small amount of protein is dependent on the ingestion of large amounts of carbohydrate and fat, sufficient to make the total caloric value of the diet from 1.7 to 2.4 times the basal energy requirement. McCann believes that failure to establish nitrogen balance on such low protein diets is due to failure or inability of the subject to ingest sufficiently large quantities of carbohydrate and fat, rather than to an inherently large wear and tear quota in tuberculosis. One of the disadvantages of the enormous diets that have been recommended from time to time lies in the frequent inability of the patients to manage the alimentary task represented by such intakes. After all, forced feeding means little that is beneficial if the ration fails to be properly digested and absorbed. Hence one can only agree with McCann in his criticism of large diets and admit that, in the light of our present knowledge, the optimal quantity of protein in the dietotherapy of tuberculosis lies between the extremes of such forced feeding as is represented by 270 gm. (9 ounces) of protein a day and the unduly small intakes of the low protein advocates. Quoting McCann, while some patients can be made to gain nitrogen and weight on diets containing from 37 to 45 gm. (571 to 694 grains) of protein, this requires a large allowance of nonprotein food, especially of carbohydrate, in amounts sufficient to bring the total calories daily up to from 3,500 to 4,000. His experience has shown that nitrogen balance may be established at from 10 to 15 gm. (154 to 231 grains) of nitrogen (62 to 93 gm. [2 to 3 ounces] of protein), with a rather moderate number of calories in the diet (2,500). These figures are in accord with the average experience of the healthy man, and indicate that no exception is especially called for in the case of the tuberculous, except perhaps that the "biologic quality" of the dietary proteins in particular should be satisfactory.

1. Graham and Poulton: Influence of Temperature on Protein Metabolism, Quart. J. Med. 5:182, 1912.
2. McCann, W. S.: The Protein Requirement in Tuberculosis, Arch. Int. Med. 29:33 (Jan.) 1922.

GASTRIC JUICE AND THE TUBERCLE BACILLUS

The reputed antiseptic action of the gastric juice has long furnished the basis for the sense of security which we feel against invasion by living organisms that may find their way into the alimentary canal. Hydrochloric acid is germicidal when it is present in sufficient concentration. With a normal content of this secretory component of the stomach contents, more than traces of so-called fermentation products are rarely found; whereas, any reduction of the acidity is likely to be followed by bacterial and other microbiotic activities which may produce organic acids and gas. The current belief is summarized by the statement of a recent writer[1] that animals are constantly eating with their food bacteria, molds, protozoa or other parasites which are killed by the gastric juice. Of the vast number of bacteria that we swallow, the great majority are killed in the stomach; and persons having a copious and active gastric juice are less liable to infection by typhoid and cholera than those with less acid juice. The digested strongly acid material called chyme is almost sterile as it escapes from the stomach, and contains few living bacteria.

It is always unwise, however, to generalize too broadly about the protective devices of the human organism. There is no universally potent immunity against harm; and even the most approved factors for resistance to harm break down at times. Bacterial spores, for example, are singularly resistant to the common antiseptic procedures. Some varieties of microorganisms are less easily destroyed than others, because of the relative impermeability of their bodies to bactericidal reagents. The facts here at issue have an interesting and important bearing upon the problem of infection with tuberculosis. If it is true that probably about 95 per cent. of all persons living in civilized communities are infected with *Bacillus tuberculosis* at some time during their lives,[2] and if an important portal of entry is the alimentary canal, a knowledge of the possible protective devices of the body in relation to this micro-organism is imperatively needed.

It has repeatedly been demonstrated that *Bacillus tuberculosis* can pass through the wall of the intestine when the latter is intact.[3] How the infective agent can escape destruction so frequently before it reaches

1. Mathews, A. P.: Physiological Chemistry, New York, 1920, p. 351.
2. McCampbell, E. F.: Marshall's Microbiology, Philadelphia, 1921, p. 654.
3. McCampbell, E. F.: Marshall's Microbiology, p. 671.

this place of entrance into the body is made clearer by recent investigations at the City of London Hospital for Diseases of the Chest. There, Inkster and Gloyne [4] have observed that gastric juice removed from the stomach of persons free from gastro-intestinal disease, at various periods after suitable test meals, showed very little power of destroying tubercle bacilli in sputum or mouth rinsings which had been exposed to it for relatively long periods. It is evident, therefore, that the protection against the tubercle bacillus afforded by the gastric secretion in man is apparently by no means perfect, to say the least. Vigorous efforts should always be directed against the entry of this baneful microbe, particularly in view of the foregoing evidence. If it is rightly conceded that tubercle bacilli do not readily multiply in nature outside the animal body, and that therefore dissemination must depend essentially on infected persons or animals and the materials infected by them, the hygienist is further confirmed in the current plans for preventing the dissemination and transmission of tuberculosis.

TYPHUS FEVER: A STUDY OF DISEASE AND ITS MARTYRS

The transmission of the infective agent in typhus fever by the body or clothes louse is today an accepted fact. It is one of those permanent contributions of science applicable directly to the promotion of human welfare. The knowledge of the danger lurking in an unnecessary and undesirable human parasite serves at this moment to guard us against a disease menace daily threatening our shores. Few persons stop to consider what may be the basis for the sense of security which they feel against the outbreak of frightful epidemic diseases. If those who insolently deny the advances of preventive medicine and prophylactic hygiene could be made to realize in some vivid way the horrors of typhus fever, which was rife during the Napoleonic wars, which smote Ireland severely in 1817, 1819 and 1846, and which still remains in more than one country as an aftermath of the World War, the ranks of the scoffers might be speedily diminished. Supreme above all partisan healing sects and systems and creeds, Lee [5] has forcefully remarked, stands the scientific medicine of today, the heir of all that has preceded it since men began to heal.

The determination of the exact nature of the specific cause of typhus fever has proved even more difficult than the discovery of the mode of its transmission to man. Of late there has been considerable debate about the possible etiologic micro-organism. Several years ago, attention was directed in particular to *Bacillus typhi-exanthematici*, whereas more recently emphasis has been placed on the presumable importance of the so-called rickettsia. This is the group name given to minute micro-organisms with certain peculiarities found in lice. The name honors the memory of Howard Taylor Ricketts of Chicago, who first described micro-organisms possibly of this type in connection with studies on typhus, and who became a martyr to science when he died from the disease which he was investigating in Mexico City.

It has gradually become apparent that there are a number of very small bacterium-like micro-organisms, of which more than a dozen have already been partly differentiated. Rickettsia have been found in lice from presumably healthy persons; and healthy persons have in turn been subjected, without evident ill effects, to lice containing rickettsia. This fact has led competent investigators to assume that rickettsia are not pathogenic. Nevertheless, the existence of forms different from ordinary bacteria in lice from typhus patients has forced careful attention to them. The careful investigations of the Typhus Research Commission of the League of Red Cross Societies to Poland under the leadership of Wolbach and Todd,[6] whose main report has just been published, offer striking evidence of the dominant etiologic relationship of *Rickettsia prowazeki* to typhus. This micro-organism was named in 1916 by da Rocha-Lima in honor of von Prowazek, who also became infected with typhus, as did Ricketts, during his studies and died. The most important basis for the Red Cross Commission's conclusion was furnished by experiments indicating that the virus of typhus and *Rickettsia prowazeki* are inseparable in infective lice. Next in importance is the fact of the presence of bodies indistinguishable from *Rickettsia prowazeki*, demonstrable with great regularity, in the lesions of typhus in man. Typhus appears to be a disease of the smaller blood vessels, and the reputed parasite localizes almost exclusively in the vascular epithelium.

A "by-product" of the investigations in Poland has been certain corroboratory evidence that *Rickettsia pediculi*, an extracellular form of rickettsia found in lice, is the cause of trench fever. The typhus organisms are essentially intracellular in their occurrence, whether they are found in the tissues of infected man or in the stomach epithelium of the invaded louse. Much remains to be learned about the rickettsia, and the typhus-producing form in particular. It is not yet clear why lice do not invariably become infective when nurtured under proper conditions on typhus patients. Perhaps the louse must pierce a capillary at the site of a lesion or location of rickettsia in the endothelium. Precisely how the rickettsia enter the human patient is also not yet clear. These are questions which require expert knowledge and investigative

4. Inkster, J., and Gloyne, S. R.: The Bactericidal Action of Gastric Juice on B. Tuberculosis, Brit. M. J. 2: 1024 (Dec. 17) 1921.
5. Lee, F. S.: Scientific Features of Modern Medicine, New York, Columbia University Press, 1911, p. 175.
6. Wolbach, S. B.; Todd, J. L., and Palfrey, F. W.: The Etiology and Pathology of Typhus, Cambridge, Mass., Harvard University Press, 1922.

skill of a high order. The study of typhus, furthermore, calls for real heroism. This is attested by the wonderfully expressive dedication of the Red Cross Report "to the memory of the investigators of typhus who, as a consequence of their researches, contracted the disease and died." Here are the names, lest we forget: Conneff, Cornet, Jochmann, Lüthje, von Prowazek, Ricketts, Schüssler. And here is the lesson: [5]

The altruism of men of medicine has become proverbial. Their heroism in investigating and treating disease is often put to the test, and is rarely found wanting. Their ideals are high, and they can be trusted to do what is within their power to put an end to the ills of suffering humanity. Yet it should be borne in mind that scientific medicine unaided has a wellnigh impossible work before it. If it is to accomplish the final banishment of disease, it must have the sympathetic cooperation and encouragement of mankind, in whose interests it continually labors.

ORIGIN OF THE BLOOD PROTEINS

Since the discovery that food proteins enter the circulation in the form of the amino-acids derived from them by digestion, and that the latter presumably are the true nutrients of the tissues, the function of the blood proteins has become more obscure than ever before. Formerly the normal proteins of the plasma were supposed to represent a nitrogenous pabulum always ready for the use of the body cells. Today there is no conclusive evidence of the consumption of these blood proteins by the tissues. Equally obscure is the origin of serum albumin and the serum globulins, which form conspicuous components of the circulation. Biologic analysis and immunologic reactions demonstrate that the blood proteins are not identical with the somewhat similar proteins of tissue cells; nor are the blood proteins a direct disintegration product of the leukocytes. In the lack of convincing evidence it is futile today to hazard even a guess as to the origin and destiny of the larger part of the plasma proteins.

There is some evidence, however, to indicate that these blood proteins are of great moment to the economy. The published work of Kerr, Hurwitz and Whipple,[1] for example, justifies the conclusion of such physiologic importance, since they found the stability of the serum protein concentration to be "truly remarkable." According to these investigators, the normal level is quite constant, and considerable deviations from this normal base line are not well tolerated by the body; in fact, profound shock may result. When the serum proteins are depleted, the repair or regeneration of these proteins is a slow process. It is as difficult to reconstruct these proteins as it is for the body to repair and replace liver cells following an extensive liver injury. Following a withdrawal of plasma, a rapid replacement of serum proteins may proceed for a few minutes, thus indicating the existence of some reserve supply of the substances concerned, possibly in the body cells. But the emergency supply is evidently small, and the production of other similar material is difficult and requires time.[2] It is reported that fasting does not prevent serum protein regeneration; therefore it is possible for the body to release these substances or to construct serum proteins from its own protein end-products.

The precursors of fibrin that are present in the blood apparently have a somewhat different history. Recent students of the clot-forming protein have remarked that, "compared with the other plasma proteins which are so stable in total concentration, the fibrin is truly mercurial in its changes."[3] They assert that the body under physiologic conditions will not tolerate a low blood plasma fibrinogen content and promptly forms sufficient material to return the fibrinogen level to normal or above normal. Foster and Whipple[4] believe, as the result of their investigations at the University of California Medical School, that diet factors may be concerned in the fluctuations of this labile blood plasma protein. In fact, the evidence speaks somewhat for a constant manufacture and utilization of fibrinogen in the body. Tissue injury appears to be the most powerful single stimulus to overproduction of fibrinogen. Along with inflammation, it causes a prompt and notable increase in fibrin values in the blood. Foster and Whipple[4] have observed that bacteria are not concerned in this reaction, which is identical whether a sterile or a septic inflammation is present.

Experiments conducted some time ago by Mathews seemed to indicate that after depletion of the blood in respect to fibrinogen this plasma protein can be reformed normally if the liver and intestine are intact, but that reformation is greatly reduced if the intestine is absent.[5] The fibrinogen appeared to be added to the blood in the portal area and chiefly in the intestine. Mathews did not suppose that the latter organ formed the blood protein from its own peculiar tissues, but rather that the fibrinogen came probably from the leukocytes and that the place of their destruction was the intestinal area. Under these conditions the other blood proteins are not simultaneously increased; hence there is no occasion to assume a common origin for all.

Foster and Whipple,[4] however, while admitting that there may be temporary reserve supplies of fibrinogen elsewhere in the body, have lately come to the conclusion that the liver is the chief potential source of this protein. The only condition, they state, which, without exception, causes or is associated with low fibrin values is acute extensive liver injury. The uniformity of this hepatic reaction, they add, is of great significance, and

1. Kerr, W. J.; Hurwitz, S. H., and Whipple, G. H.: Am. J. Physiol. **47**: 356, 370, 379 (Dec.) 1918.

2. Smith, H. P.; Belt, A. E., and Whipple, G. H.: Rapid Blood Plasma Protein Depletion and the Curve of Regeneration, Am. J. Physiol. **52**: 54 (May) 1920.

3. Foster, D. P., and Whipple, G. H.: Blood Fibrin Studies, II, Normal Fibrin Values and the Influence of Diet, Am. J. Physiol. **58**: 379 (Jan.) 1922.

4. Foster, D. P., and Whipple, G. H.: Blood Fibrin Studies, IV, Fibrin Values Influenced by Cell Injury, Inflammation, Intoxication, Liver Injury and the Eck Fistula, Am. J. Physiol. **58**: 407 (Jan.) 1922.

5. Mathews, A. P.: Physiological Chemistry, New York, 1920, p. 555.

especially the remarkable parallelism which is demonstrable between the extent of the liver injury and the depression in fibrin values. Slight liver injury will cause a rise in blood fibrin values, like tissue injury elsewhere in the body; but, when the injury is extreme and acute, a prompt fall invariably ensues. If the conclusions remain tenable, the liver will thus have another duty added to its already long list of real or suspected functions.

Current Comment

SALIVA AND THE BACTERIA IN THE STOMACH

Although the acidity of the normal gastric juice confers on it antiseptic properties that serve to protect the alimentary tract and its appendages from bacterial invasion during the transport of food along the gastrointestinal canal, this protective function is not always in a state of activity. Secretion in the stomach is scanty and scarcely acid during periods of gastric quiescence, particularly the so-called interdigestive phase of this organ. One might expect, therefore, that this period, when the stomach is relatively at rest and the secretion of acid is at a minimum, would afford favorable opportunity for the development of bacteria. Examinations of gastric contents withdrawn by the Rehfuss tube have, in fact, revealed considerable numbers of microorganisms under such circumstances; but Kopeloff [1] has apparently demonstrated that they are due to contamination with saliva. The number of bacteria in the stomach at any one time depends almost entirely on the saliva swallowed (when the bacterial content of the food may be disregarded). Even when the gastric acidity is low, bacteria fail to gain any considerable foothold or to make the stomach a focus of infection apart from the microbial contributions derived as indicated from the mouth.

SPLEEN MYTHS

As a result of the inconclusive attempts to solve the problems presented by the spleen, there have gradually arisen a number of theories—perhaps they should be called traditions—with respect to alleged functional interrelations between the spleen and some of the digestive organs. The asserted swelling of the spleen during the digestive cycle has been cited to support contentions that the organ affects gastric secretion in some way, possibly by producing an activator of pepsinogen or by altering the quantity and quality of the gastric juice. Similar postulates have been made with reference to the effect of the spleen on the pancreatic secretion. Furthermore, the flow of bile and even the orderly progression of intestinal peristalsis have been related by occasional physiologic writers to splenic collaboration of some undefined sort. Many of these allegations have been disposed of in recent years by investigations directed to test their validity. One of the latest of such critical researches has just been reported by Mollow [1] from Kestner's laboratory in Hamburg. Careful comparisons of the secretory behavior of fistula dogs before and after splenectomy have failed to disclose any measurable differences. This applies not only to the volume of the gastric, pancreatic and biliary secretions but also to the motor activities of the stomach, intestinal peristalsis and absorption. Furthermore, there were no alterations in the enzyme content of the pancreatic juice attributable to removal of the spleen. Let us hope, Mollow writes, that the old fable of the influence of the spleen on digestion will at last disappear from physiologic literature before the oft repeated assumption celebrates its centennial next year. With it may go the reiterated statement of Richet [2] and others [3] that splenectomized animals eat more than normal animals, their voracity apparently being stimulated by an augmented need of food. Smith and Ascham [4] of Yale University have lately completed experiments in which the growth as well as the qualitative and quantitative aspects of the food intake were accurately controlled in comparable animals with and without spleens. In no case did splenectomy afford evidence of an increased appetite or of variation from the normal growth rate.

DIFFUSE ENDOTHELIOMA OF BONE

In a recent report, Ewing [5] describes a heretofore apparently unrecognized primary bone tumor that in the past undoubtedly has been classed as round cell sarcoma. This tumor consists of broad sheets of small polyhedral cells with clear outlines and but little cytoplasm, which often seems to have undergone dropsical degeneration, and with small hyperchromatic nuclei. There is no intercellular substance. In places the cells line complexly interwoven channels that contain blood and, on account of this evident endothelial nature of the constituent cells, the tumor is held to be an endothelioma developing from the vessels of either bone tissue or marrow. In the seven cases mentioned by Ewing, this endotheliomatous bone tumor occurred in young persons, from 14 to 19 years of age, and the bones involved were the radius, tibia, ulna, ischium, scapula and skull bones, all the tumors with one exception being solitary and all clearly primary in the bones involved. The growth was rather slow, the often painful and tender swelling sometimes fluctuating in size, probably the result of variations in the blood supply. In the long bones the shaft was the part involved, the roentgenograms disclosing a diffuse fading of the bony structure without any new bone production as in osteogenic sarcoma; without evident perforation of the bone as in osteogenic sarcoma and myeloma, and without any central excavation surrounded by a widened bony capsule as in the benign giant cell tumor of bone. Bence-Jones proteinuria was not noted in any case. Diffuse endothelioma of bone appears to be susceptible

1. Kopeloff, N.: The Bacterial Content of the Stomach as Influenced by Saliva, Proc. Soc. Exper. Biol. & Med. 19: 110 (Dec.) 1921.

1. Mollow, W: Milz und Verdauung, Ztschr. f. physiol. Chem. 117: 218, 1921.
2. Richet: J. de physiol. et de path. 14: 689, 1912; 15: 579, 1913.
3. Prym: Verhandl. d. Kong. f. inn. Med. 28: 398, 1911.
4. Smith, A. H., and Ascham, L.: Relation of Splenectomy to Growth and Appetite in the Rat, Proc. Soc. Exper. Biol. & Med. 19: 127 (Dec.)-1921.
5. Ewing, James: Diffuse Endothelioma of Bone, Proc. New York Path. Soc. 21: 17, 1921.

to irradiation, the diffuse growth in the shaft of the radius in one of Ewing's cases receding promptly under radium, death occurring later, however, with evidences of skull involvement and recurrence in the radius. If these tumors prove amenable to radium, accurate diagnosis becomes essential before any mutilating operation may be undertaken. The age of the patient, the situation of the tumor, and the fading of bony structure without evidences of new bone formation on roentgenographic examination may furnish an adequate basis for diagnosis, as pointed out by Martland in the discussion of Ewing's report; but in many cases exploratory incision and removal of tissue for microscopic examination no doubt will be deemed necessary, and in such cases great care must be exercised in carefully cauterizing the incision with phenol (carbolic acid) or the actual cautery to prevent dissemination of tumor cells. To conclude, a not infrequent tumor occurs in the young, "commonly identified with osteogenic sarcoma, and usually called round cell sarcoma, which is really of endothelial origin, and which is marked by such peculiar gross anatomical, clinical and therapeutic features as to constitute a specific neoplastic disease of bone." Naturally, further observations on this newly differentiated form of neoplasm will be received with keen interest.

THE PERSONALITY OF A HOSPITAL

The Massachusetts General Hospital is 100 years old, a tender age considering the generations man has inhabited the region about Boston. The Indians of Massachusetts had sickness in their tribes, but no hospitals; their predecessors, whoever they were, had disease, but no hospitals. It required a stable government and high-minded men with an insatiable desire for service to their fellow men, before the old Bulfinch building could rise above the sick of Boston. Warren and Jackson, founders of the Massachusetts General Hospital, were such men. Their ideals of service and their devotion gave an impetus to the new organization that carried it honorably through one century. The Bigelows, Shattucks, Cabots, Cushing and others have kept those ideals living, and have seen them grow until rooted in every department of the much larger and older organization. The development of the personality of Massachusetts General is an interesting story, as told by Dr. Harvey Cushing in his "Ether Day" address on the seventy-fifth anniversary of that great discovery. "Like an old wine," he said, "it has acquired a certain quality which only comes with age, and a new institution cannot imitate, for it represents the fusion of the countless personalities of all those who have worked for it or in it, no matter how lowly. . . . Anesthesia christened by Holmes, litholapaxy by Bigelow, appendicitis by Fitz, are three unquestioned offspring of the Massachusetts General Hospital." Credit is given to the humbler servants as well as to those medical men whose work helped to make the institution so well known: the faithful Hugh McGee, who served for fifty years, and James Mains, with his parkinsonian tremor, who was the mainstay of the Bigelow amphitheater for nearly as long. Then there was Barry, inimitable mimic of surgeons who had gone before, Pipper the night orderly, "Outpatient" John, and Louis Brown, who first came a boy with osteomyelitis, and died in the hospital thirty years later from complications of his old malady, meanwhile having become, as a photomicrographic expert, a most useful and loyal servant of the hospital. Distinguished organizations devoted to the sick are too few in number. Age is not absolutely necessary, but character, skill and cooperation are indispensable.

HISTORICAL FACTS REGARDING UREA

It marked an era in organic chemistry when Friedrich Wöhler succeeded, in 1828, in effecting an artificial synthesis of urea, which had long been known as an end-product of protein transformation in the organism. This novel work demonstrated that the intervention of mysterious agencies, of subtle "vital processes," is not necessary in the genesis of compounds of biologic occurrence. The locality in which urea is formed in the body was undoubtedly as much of a puzzle to physiologists in the early days of the last century as was the chemistry of its origin. Dr. Cowgill [1] of Yale University has pointed out that exactly a century has elapsed since the first definite proof that urea exists in the blood was furnished by Prévost and Dumas.[2] They offered conclusive evidence that urea accumulates in the circulating fluid when the kidneys are ablated, and hence demonstrated that, contrary to the suppositions often advanced in those early days, these organs do not manufacture the nitrogenous waste product but merely eliminate it. Prévost and Dumas concluded that urea is eliminated by the kidney to an extent corresponding to its formation elsewhere in the body. Nearly a century later, Marshall and Davis [3] demonstrated the urea content of all organs and tissues to be approximately uniform and equal to that of the blood, both in normal conditions and when abnormally large amounts of urea are present. Today the estimation of the urea content of the blood is a routine task of the clinic in securing an index of kidney function. Thus has physiologic chemistry changed from a purely qualitative discipline to one in which its quantitative contributions find a useful application in medicine.

1. Cowgill, G. R.: Chemistry of the Blood One Hundred Years Ago, Scient. Month. **14**:161 (Feb.) 1922.
2. Prévost, J. L., and Dumas, J. B. A.: Examen du sang et son action dans les divers phénomènes de la vie, Bibliothèque universelle, Sciences et arts **18**:208, 1821.
3. Marshall, E. K., Jr., and Davis, D. M.: Urea: Its Distribution in and Elimination from the Body, J. Biol. Chem. **18**:53, 1914.

Lipoma of Uterus.—Including the case here reported, there are but seventeen such tumors on record. Clinically there is nothing to distinguish these tumors from other nonmalignant tumors of the uterus. The tumors have varied both in their location and in the details of their structure. Four occurred as cervical polyps, the remaining thirteen as tumors of the body of the uterus. Seven, including the one here reported, are listed as simple lipomas. Of these seven tumors, two occurred as cervical polyps. The other ten tumors are classed as lipomyomas.—R. C. Schleussner, *Proc. New York Path. Soc.* **21**:33 (Jan.-May) 1921.

Association News

THE ST. LOUIS SESSION

The Scientific Exhibit

The Scientific Exhibit at the St. Louis Session will be located in the auditorium of Moolah Temple. Adjacent to the Scientific Exhibit Booths is the hall which will be used as a moving picture theater. In the same building will be the Registration Bureau, Commercial Exhibit, Information Bureau and Branch Postoffice; thus the Scientific Exhibit will be of easy access to all in attendance. Applications are now coming in, asking for reservations. Space will be assigned about May 1 and each applicant notified of the space assigned to him. Any one desiring space for an exhibit or an assignment of time on the moving picture theater program should make application before that date, as no application can be considered later. Address, Director of Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Ill.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital Transfers.—Major R. H. Stanley has been transferred from Whipple Barracks, Ariz., to take charge of the Palo Alto Hospital, succeeding Major J. M. Wheat, who has been transferred to the Marine Hospital, San Francisco. Coincident with this change, the hospital will be transferred from the control of the U. S. Public Health Service to the Veterans' Bureau.

DISTRICT OF COLUMBIA

Personal.—Col. H. J. Nichols of the Army Medical School has been elected chairman of the District of Columbia branch of the Society of American Bacteriologists; Capt. C. S. Butler, commandant of the Naval Medical School, was elected vice chairman, and Miss Alice C. Evans of the hygiene laboratory, U. S. Public Health Service, was chosen secretary-treasurer. The society, through L. A. Rogers, president of the National Society of American Bacteriologists, deposited with the Army Medical Museum a collection of type cultures of bacteria.

GEORGIA

New Officers of County Societies.—The following elections of county societies have recently been announced: Fulton County Medical Society: president, Dr. Rufus T. Dorsey, Atlanta, and secretary-treasurer, Dr. Grady E. Clay, Atlanta. ——Bibbs County Medical Society: president, Dr. J. P. Holmes, Macon, and secretary-treasurer, Dr. O. L. Spivey, Macon.——Troup County Medical Society: president, Dr. W. H. Clarke, LaGrange, and secretary-treasurer, Dr. Enoch Gallaway.——Walton County Medical Society: president, Dr. H. L. Upshaw, and secretary-treasurer, Dr. J. K. McClintic, Monroe.——Coweta County Medical Society: president, Dr. J. B. Peniston, Newman, and Dr. M. H. Farmer, Newman.—— Lowndes County Medical Society: president, Dr. J. M. Smith, Valdosta, and secretary-treasurer, Dr. T. H. Smith, Valdosta. ——Gordon County Medical Society: president, Dr. J. M. Erwin, Calhoun, and secretary-treasurer, Dr. Z. V. Johnston, Calhoun.

ILLINOIS

Hospital News.—The contracts have been let for the erection of a Catholic Orphanage at Alton, to be erected at a cost of $600,000.

Personal.—Dr. Emil C. Lofgren has been appointed a member of the board of examining surgeons for pensions for Winnebago County, to succeed Dr. Dudley W. Day, resigned. ——Dr. Clarence D. McKinney, Paxton, has recently been appointed district health superintendent under the direction of the state department of public health. His territory will include Ford and McLean counties. Dr. McKinney's appointment brings the total number of such officers who are now active in the state service up to twenty.

Health Promotion Week.—By proclamation, Governor Small has set aside the period of May 7-13 as Health Promotion Week. The state department of public health has completed a program for the occasion and this may be secured on request. The three activities emphasized particularly are birth registration drives, milk pasteurization campaigns and better baby conferences. Members of the department staff are available for engagements to speak on public health topics and to assist in conducting better baby conferences.

Clinic Service.—It is announced by the national association that the tuberculosis clinic service organized for the Illinois Tuberculosis Association will be given wide publicity. Clinics have been held in practically every county in the state under the auspices of the county medical and the county tuberculosis societies, and under the direction of Dr. George T. Palmer, Springfield, with his staff consisting of Dr. Orville W. McMicheal, Chicago; Dr. James W. Pettit, Ottawa; Dr. Roswell T. Pettit, Ottawa; Dr. Robert H. Hayes, Chicago, and Dr. Herman H. Cole, Springfield.

Clinic for Crippled Children.—A new clinic for crippled children has been established by the division of child hygiene and public health nursing of the state department of public health at Rochelle. Dr. L. A. Beard, president of the board of directors of the Ogle County Tuberculosis Sanatorium has been placed in charge of local details. The clinic will function as an integral part of the work of the DeKalb County Health League, an organization which effectively coordinates the efforts and expenditures of all health agencies, whether governmental or extragovernmental, in DeKalb, Lee, Whiteside and Ogle Counties.

Railway Sanitary Code.—The state department of public health, with the approval of the Illinois Board of Public Health Advisors, has adopted a railway sanitary code. The code as adopted, conforms to the railway sanitary code recommended and approved by the conference of state and provincial health authorities and has the approval also of the U. S. Public Health Service and the American Railway Association. Similar codes have already been adopted in about twenty states and it is the aim of the state, federal and railway health officials to have the railway sanitary code uniform in all states because of the interstate connection of railroads. This code regulates the transportation of persons having communicable diseases, the water and ice supplies for railway trains, stations, offices and shops, the cleaning and disinfection of cars, the sanitary condition and control of cars while in service and the sanitary conditions at railway stations, railroad construction camps, offices and shops. A complete copy of the railway sanitary code will be published in a later number of *Health News.*

INDIANA

Hospital News.—The new Adams County Memorial Hospital will be erected early in the summer at a cost of $100,000. ——A new tuberculosis hospital will be built in Grant County.

Personal.—Dr. Wilson T. Lawson has been elected health commissioner of Hendricks County.——Dr. M. May Allen has been made assistant director of the child hygiene division of the state board of health.——Dr. Louis A. Bolling, Attica, has been appointed to the clinic for veterans of the World War, Washington, D. C.——Dr. Burton D. Myers, Bloomington, has been elected to the committee of the Association of American Medical Colleges.——Dr. Clinton G. Beckett, Attica, has been appointed district medical officer of the Federal Board for Vocational Education, U. S. Veterans' Bureau, Evansville.

IOWA

New Hospitals.—The new county hospital at Mount Pleasant was recently opened. This institution is the fifth to be erected under the Iowa County hospital law. It was built at a cost of $100,000. Under another provision of this statute, tuberculosis hospitals have been built by Woodbury, Des Moines, Dubuque, Scott and Wapello counties.——A new hospital has been opened at Hamburg.

KANSAS

Fake Healer.—The commissioner of health and sanitation of Kansas City announces that a man known as E. W. Haskelt, who claims to be the head of the Interstate Medical and Surgical Institute Association of Kansas City—a non-

existent institution—is traveling through the state promising to cure any disease for $50 in advance. Several people, it is alleged, have fallen victims to him. At various times he has been working in Missouri. Physicians would confer a favor if they will communicate with the health department, Kansas City, by wire or phone if they hear of him working in the vicinity.

University News.—The site has been purchased, through legislative appropriation, a gift from the city of Rosedale, and contributions, for the erection of the first unit of the new hospital of the University of Kansas School of Medicine, Rosedale. This institution will be erected at a cost of $400,000 and will have a capacity of 100 beds.——Dr. Ralph Major, department of internal medicine, University of Kansas, is convalescing from an appendectomy.——Dr. Wilfred Grenfell gave an address on medical conditions in Labrador, before the students and nurses of the school of medicine.——Dr. Leonard Rowntree of the Mayo Foundation, Rochester, Minn., was recently a guest of the Kansas City Academy of Medicine, and conducted a clinic of the senior class of the University of Kansas School of Medicine, Rosedale.

KENTUCKY

Hospital News.—A fire, causing damage estimated at $14,000, occurred recently at the U. S. Veterans' Hospital, Princeton.——A new hospital will be erected at Eminence, at a cost of $25,000, by the Odd Fellows.

Kentucky Academy of Science.—At a meeting of the academy, to be held May 20, at Lexington, Dr. Harry Gideon Wells, professor of pathology in the University of Chicago and Sprague Memorial Institute, Chicago, will deliver an address on "The Present Status of the Cancer Problem."

LOUISIANA

Reorganization of Medical Society.—The Seventh Congressional District Medical Society, suspended during the war, was reorganized, March 17, at a meeting held in Crowley. Dr. Henry W. E. Walther, New Orleans, read a paper, and the following officers were elected: president, Dr. Norman S. Craig, Jennings; vice president, Dr. Sylvan Wolff, Opelousas, and Dr. A. H. Morgan, secretary-treasurer.

MARYLAND

Inspection of Veterans' Bureau Clinic.—Dr. William H. Welch, director of hygiene, Johns Hopkins Hospital, recently inspected the Veterans' Bureau Clinic, 22 Light Street, Baltimore, accompanied by Dr. Isidore I. Hirschmann, district medical officer. Most of the departments have been recently installed and, according to Dr. Welch, compare favorably with any in the country.

Hospital Given Equipment.—Equipment valued at $3,715.84 has been presented to the University Hospital, Baltimore, by the Red Cross volunteer aides, in commemoration of the second anniversary of their connection with the institution. Included in the donations was the complete equipment for a new cystoscopic clinic, with individual roentgen ray, in addition to other apparatus. The presentation was made by Mrs. Robert K. Noble, the chairman of the Red Cross aides. Dr. Albert F. Woods, president of the University of Maryland, and Dr. Kenneth B. Jones of the hospital staff, accepted the equipment on behalf of the hospital.

Johns Hopkins University Fees to Be Increased.—Increases in tuition fees for the next academic year were announced recently by Johns Hopkins University for its medical department, the summer school and the college courses for teachers. Beginning next October, the tuition at the medical school will be $300 a year, instead of $250. The tuition fee for the 1922 session of the summer school will be raised from $30 to $35 for two or three courses. Additional courses will cost $14 instead of $12. The fee for a single course is raised from $20 to $22. An additional fee of $3 is set for late registration. No other changes in tuition fees have been made. The increase in tuition charges has been made necessary by the increasing demands of the university's budget. The increase in the summer school is due directly to the necessity for higher salaries for the special summer instructors.

Personal.—Dr. William S. Halsted, professor of surgery at the Johns Hopkins Medical School and surgeon in chief of the Johns Hopkins Hospital, was given a dinner by the National Dental Association, at Baltimore, April 1. In recognition of his service to the medical profession and humanity, as discoverer of the modern method in neuroregional anesthesia, the association presented him with a handsome medal. ——Dr. Hugh H. Young has returned to Baltimore from a two months' trip to the Mediterranean, during which time he visited southern France, Algiers, Egypt and Turkey.—— Dr. Ernst Fuchs, professor emeritus of ophthalmology, whose visit to Baltimore was postponed by illness, gave a notable lecture on "Ophthalmology," at Osler Hall, Baltimore, March 29.——Dr. Howard A. Kelly of Baltimore is spending a few weeks in Florida, in search of rare fungi and reptiles.—— Dr. George W. McCoy, director, United States Hygienic Laboratory, Washington, D. C., delivered a lecture on "Plague" at the Johns Hopkins School of Hygiene and Public Health, Baltimore, April 3, under the DeLamar course of lectures.——Dr. Frank Gordon, commandant at U. S. Veterans' Bureau Hospital No. 56, at Fort McHenry, has severed his connection with the hospital, to take charge of the Veterans' Bureau Hospital at Portland, Ore.——Dr. Clayton C. Campbell, chief of the medical service, U. S. Veterans' Bureau Hospital No. 56, at Fort McHenry, by orders effective April 1, has gone to Veterans' Bureau Hospital No. 52 at Boise City, Idaho, and Dr. Sherwood Dix has been transferred to Veterans' Bureau Hospital No. 72 at Helena, Mont. Both officers have been at Fort McHenry for more than a year.

MASSACHUSETTS

Hospital News.—The new wing at the Belmont Hospital, Worcester, erected at a cost of $177,000, was formally opened in February. This addition will be known as the Coffey ward, in honor of the late James C. Coffey, who for twenty-five years was executive officer of the Worcester Board of Health. It has a capacity of sixty-eight beds and is connected with the main building by a subway.

MICHIGAN

Violation of Narcotic Law.—It is reported that Dr. Arthur R. Sevensma, Grand Rapids, was sentenced to one year and three months in the Leavenworth prison for violation of the Harrison Narcotic Law, in the court of appeals in Cincinnati, recently.

Smallpox Epidemic.—It is announced by the health department that an outbreak of hemorrhagic smallpox has developed into an epidemic of twenty-eight cases, with eight deaths, at Muskegon. Among these were two infants under 3 weeks of age, and a man of 77 years. The disease is also prevalent, according to reports, in the counties of Alpena, Genesee, Huron, Mackinac, Oakland, Osceola, Saginaw, Sanilac, St. Clair, St. Joseph and Wayne.

Health Information.—A joint committee has been formed representing the University of Michigan, the Michigan State Medical Society, the state department of health, the Detroit College of Medicine and Surgery and the Michigan State Dental Society, for the purpose of presenting to the public fundamental facts of modern scientific medicine. Speakers of recognized authority will be supplied, and more than eighty-five lecture topics have already been listed, with the names of fifty men and women, leaders in their professions, as available speakers. Any community wishing to secure a lecturer to speak on any phase of public health will be supplied by the joint committee. All expenses of the lecturer will be paid by the organizations which they represent.

MINNESOTA

Child Health Day.—The first Child Health Day was held in St. Paul, March 24, under the auspices of the St. Paul association and the National Dairy Council, in cooperation with the General Council of Mothers' Clubs and the Parent-Teacher Association.

Personal.—Dr. William M. Sweeney has resigned as health officer of Red Wing and will be succeeded by Dr. Nels L. Werner.——Dr. C. E. Gray, Rush City, is now in sole charge of the Rush City Hospital, having purchased Dr. Engstrand's interest.——Dr. Isaac A. Abt, professor of pediatrics, Northwestern University Medical School, Chicago, delivered the annual address before the Alpha Omega Alpha fraternity of the University of Minnesota Medical School, Minneapolis. ——Dr. Katherine A. Nye has been elected to the board of health of St. Paul.

MISSISSIPPI

Legislative News.—A bill for the appropriation of $134,000 per annum to the state board of health for emergency expenses, the eradication of malaria, pellagra and hookworm,

passed the House, March 9, and will be used as follows: for the hygienic laboratories, $20,000 per year; vital statistics, $12,000; rural sanitation, $30,000, and child welfare work, $30,000.

Merger of Medical Societies.—At a meeting of the Clarksdale and Six Counties Medical Association, March 23, at Clarksdale, a resolution was introduced calling for the dissolution of the Clarksdale and Six Counties Medical Association and the merging of this association with the medical societies of Humphreys, Leflore and Washington counties, the united societies to be designated the Delta Medical Association. This resolution was tabled for final consideration in November.

MISSOURI

State Medical Meeting.—The annual meeting of the Missouri State Medical Association has been changed; it will be held May 2-4, at Jefferson City, instead of May 9-11, as previously announced.

St. Louis Clinics.—The St. Louis Clinics has recently established a junior membership with dues at $10 per year, limited to men who have been graduated five years or less and who desire to list their clinics. This section will hold a special clinic week, May 18-23, in conjunction with the Local Committee of Arrangements of the American Medical Association.

Hospital News.—Dr. William L. Gist, superintendent of the Kansas City General Hospital, has inaugurated a system of part pay care for patients able to pay something for hospital care, but unable to pay the charges at a private institution. A social service worker has been employed to investigate the financial condition of those admitted to the hospital on the part pay plan.

NEW JERSEY

Essex County Medical Society.—At a meeting of the society held recently, a resolution was adopted to oppose Senator Parry's series of bills that would take the control of the Essex County institutions at Verona and Soho out of the hands of their boards of managers and give complete control to the board of freeholders. These bills have passed the Senate and are now in the House. The society voted the indorsement of the Alexander bills, regarding marriage and social diseases.

NEW YORK

Chiropractor Bill Dies.—At a hearing on the Chiropractor bill before the legislature, more than 1,000 persons are said to have appeared against the bill and only about 100 in favor of it. The bill was recommitted for amendment and died in committee.

Banquet for Woman Physician.—A dinner in recognition of her twenty-five years' public health service will be given to Dr. Sara Josephine Baker, director of child hygiene of the department of health, April 20, at the Hotel Commodore, New York City. Dr. Henry Dwight Chapin is chairman of the committee in charge.

Health Talks by Radio.—The first of a series of five minute health talks was wirelessed from Schenectady General Electric Radio Station, March 24. Suggestions were requested as to the health subjects the public prefer, bearing on the general health and protection of the community. Address "Radio" State Department of Health, Albany. Individual cases will not be taken up.

Hospital News.—A new tuberculosis sanatorium for men will be erected at a cost of $40,000, in connection with the Willard State Hospital.——The Harlem Eye and Ear Hospital, New York City, was formally opened, March 14.——A new hospital is under construction at Tuxedo Park, to be known as the Tuxedo Memorial Hospital. It will cost $200,000.——A new addition will be made to the St. Francis Hospital, Port Jervis.——The new $45,000 addition to the Bethesda Hospital, Hornell, is completed.——A group of business men prevented the sale of the Volunteer Hospital, New York City, to satisfy a judgment of $56,000, authorized by the supreme court.

Personal.—Dr. David Bovaird has been appointed superintendent of Clifton Springs Sanatorium, Clifton Springs.——Dr. Bertrand E. Roberts has been appointed epidemiologist of the state department of health, to succeed Dr. Edmund Boddy, resigned.—Dr. Thomas B. Walsh has been appointed medical inspector of parochial schools in Syracuse, to succeed Dr. Charles J. Wells.——Dr. George D. Stewart, professor of surgery, University and Bellevue Hospital Medical College, New York, delivered an address on "The Interpretation of Abdominal Pain" before the Kings County Medical Society, Brooklyn, March 23.——Dr. Charles M. Burdick has been appointed superintendent of the Dannemora State Hospital, Dannemora, to succeed Dr. John J. Ross.

State Charities to Observe Founding.—Homer Folks, secretary of the State Charities Aid Association, announces that the association will observe its fiftieth anniversary with events distributed over several months and over many parts of the state during the present year. A meeting will be held in New York, May 11, the fiftieth anniversary of the day when Miss Louisa LeSchuyler, granddaughter of Alexander Hamilton formed the association. The organization led in the movement that took from the almshouses their insane; in 1881, it secured the legislation giving the right of entry to all poorhouses to its visitors. In 1893, the association organized an agency for providing situations in the country for mothers and children. In 1907, the organization began the fight against tuberculosis. The association is an unofficial body. It has 1,200 members in the state, fifty-two county wide committees on tuberculosis and public health and has thirty-seven full time executives at work under the direction of the state committee. It has seventy-six visitors to state institutions and several hundred visitors to almshouses and public hospitals.

New York City

Hearing on Cornell Pay Clinic.—A joint meeting of the Eastern Medical Society, the New York Physicians' Association, the Yorkville Medical Society and the Harlem Medical Society, under the auspices of the committee on civic policy of the Medical Society of the County of New York, was held at the New York Academy of Medicine, March 29, for the purpose of discussing the pay clinic from the medical, the public and the economic standpoint. Dr. Walter L. Niles and Dr. Michael M. Davis were the chief defenders of the Cornell Pay Clinic, opened November 1, 1921. Dr. Louis I. H. Harris and Dr. Henry W. Berg spoke against the clinic. A report of the combined committees of the above named societies was presented. The attorney general has handed down the opinion that the Cornell Medical College Dispensary is a dispensary within the meaning of Section 290 of the State Charities Law and properly licensed by the State Board of Charities.

NORTH CAROLINA

Hospital News.—A new tuberculosis sanatorium will be erected by Guildford County at High Point at a cost of $100,000.——The cornerstone of the William J. Hicks Memorial Hospital, Oxford, was recently laid by the North Carolina Masons. The institution will cost $100,000.

Gorgas Memorial Day.—March 17 was selected as Gorgas Memorial Day by all the public schools of the state. A program consisting of articles by students of the schools on General Gorgas' work in eliminating yellow fever and malaria in Cuba and Panama, the growth of preventive medicine, health and sanitation in the state of North Carolina, and the plan of the Gorgas Memorial Institute, both in the field of research at Panama and the school of sanitation at Tuscaloosa, was presented.

OHIO

Personal.—Dr. Edward Herbst has been appointed full time examiner for the U. S. Veterans' Bureau, Columbus.——Dr. William S. Chase has resigned as president of the Akron Health Commission.

Supreme Court Rules Against Chiropractors.—A decision of the Ohio state court of appeals, which was affirmed by the state supreme court, ruled that chiropractors cannot practice in Ohio unless licensed to do so by the state medical board; and the U. S. Supreme Court has declined to review this decision. The result is that chiropractors who are said to have been practicing in the state without licenses will now be subjected to vigorous prosecution unless they secure licenses to practice.

Census of Cripples.—The Ohio State Medical Association will conduct a state census of crippled persons, 16 years of age or over, May 8-12, for the rehabilitation division of the state department of education. Handicapped persons who physicians think are capable of being trained for useful occupations so that they may be able to earn their own livelihoods will be located by the state medical association The work is supported half by federal and half by state funds.

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The trainees are placed in industrial or business concerns and in some cases in schools. Tuition, tools, books, supplies, and artifical limbs are furnished by the rehabilitation division.

OKLAHOMA

Oklahoma Public Health Association.—It has been announced that Jules Schevitz, for four years secretary of the association, died, March 22.

PENNSYLVANIA

Reorganization of Health Board.—The city of Hazleton recently reorganized the board of health with Dr. Walter Lathrop, president, and Dr. Ralph E. Buckley, vice president.

Chiropractor Convicted, Appeals.—After deliberating twenty minutes, a jury in the criminal court of Bucks County found W. B. Martindell, Bristol chiropractor, guilty of practicing medicine and surgery without a license. The trial lasted four days, before Judge William C. Ryan. An application was made for a new trial, and Martindall was released on $800 bail pending the disposal of the motion.

New Hospital Award Plan.—A system of accounting, whereby sectarian hospitals may be reimbursed for charity service rendered the public, has been worked out by Dr. John M. Baldy, head of the department of welfare. Under this plan, reimbursement for actual service rendered would supersede blanket appropriations. The exact amount the state should pay would be estimated on the basis of the number of charity and part time patients treated by each institution. Previously, hospitals reported merely gross expenses. Dr. Baldy expressed the belief that it will be legal to resume payments to sectarian institutions for actual service rendered. He announced that the system has been approved by the auditor general.

Medical Centers.—The Graduate School of Medicine of the University of Pennsylvania, together with the Medical Society of the State of Pennsylvania, is undertaking the establishment at a number of points throughout the state of graduate medical extension groups, whereby physicians and surgeons situated far from the hospitals of the bigger cities will be able to get virtually all the latest developments in clinical work and discoveries in medical science. This project has already been endorsed by the state medical association, and a committee has been named to negotiate with Dean George H. Meaker of the Graduate School of Medicine, regarding the carrying out of a definite program, which has already been submitted.

Delaware County Towns Decide on Hospital.—A permanent organization to work toward the establishment of an intercommunity hospital for the eastern end of Delaware County was effected March 31, at a meeting of the representatives from the various districts in the Upper Darby High School. Dr. Collin Foulkrod, of the Presbyterian Hospital staff, presided, until A. Milton Lutz, of Lanerch, was selected as chairman of the organization. Dr. Clifford B. Lull was one of the other officers elected. After the state medical society requested the doctors of that district to start a movement for such an institution, the physicians appealed to the civic groups of the county and the communities themselves to send representatives to the meeting. The hospital plan was unanimously indorsed. The chairman was instructed to appoint a finance committee of sufficient number to begin work immediately on plans for raising funds to build and equip the hospital.

Philadelphia

National Institute.—The tenth session of the institute for tuberculosis workers, which is conducted annually by the National Tuberculosis Association, will be held, April 10-26, under the direction of Dr. Philip P. Jacobs.

Hospital Drive.—The drive for $200,000 for the Great Heart Hospital, formerly the Garretson Hospital, which began one year ago, has taken new impetus with the announcement of several auxiliaries of the hospital that they contemplate an extensive campaign in the interest of the movement. This institution is nonsectarian and works in alliance with the medical college and the Philadelphia Dental College of Temple University.

SOUTH CAROLINA

Personal.—Dr. Jesse W. Bell has been elected a member of the board of health of Walhalla.——Dr. John W. Dupree has been appointed a member of the board of health of Simpsonville.

TENNESSEE

Banquet for Physician.—The National Academy of Medicine and the Davidson County Medical Society gave a farewell banquet, March 29, in honor of Dr. Olin West, secretary of the state board of health, editor of the *Journal of the Tennessee State Medical Association*, and secretary of the Tennessee State Medical Society, who has resigned to become Field-Secretary of the American Medical Association, Chicago.

TEXAS

Dallas Monthly Clinic.—This clinic was inaugurated in February, and is conducted by the Dallas County Medical Society. At the second clinic, March 23, Dr. Carroll Allen, professor of clinical surgery, Tulane University of Louisiana School of Medicine, New Orleans, was the guest of honor and discussed "Local Anesthesia in Major Surgery." Dr. Robert E. House, Ferris, presented his experiments concerning the use of scopolamin-morphin anesthesia.

UTAH

Pacific Coast Oto-Ophthalmological Society.—The tenth annual session of the society will be held, September 14-16, in Salt Lake City, one week previous to the meeting of the American Academy of Ophthalmology and Oto-Laryngology, at Minneapolis, September 19-21. The secretary, Dr. Edward Lecompte, Boston Building, Salt Lake City, would like to hear from members who have pathologic specimens or other exhibits of interest for the session, and also with reference to contributions for the program.

WASHINGTON

Puget Sound Academy of Ophthalmology and Oto-Laryngology.—At a meeting held in Seattle, February 24, Dr. Frederick Adams, president of the society, read a paper on "Cholesterin Crystals in the Vitreous."

Italian Decoration for Physician.—Dr. David C. Hall, University of Washington, Seattle, has been made a Chevalier of the Italian Order of Saints Maurice and Lazarus by the king, for services rendered when serving as a lieutenant-colonel in the ambulance service on the Italian front.

Personal.—Dr. Ossian J. West has been appointed director of the laboratory at Columbus Sanatorium, Seattle, to succeed Dr. Manch N. Garhart, who resigned recently.——Dr. Adelaide Woodward has received the Keiser Hind medal from the government of India, for services in India. Dr. Woodward established a hospital at Sategar for native people.

Hospital News.—A new hospital is being erected at Puyallup at a cost of $32,000. It will be a two-story building, with a twenty-five bed capacity.——The new wing of St. Luke's Hospital, Spokane, was formally opened in February.——A new sanatorium will be erected by the Commercial Club of Leavenworth at a cost of $10,000.——The Virginia Mason Hospital, Seattle, has recently been wired with aerials for radio service, which will be available in each room in the building.

WISCONSIN

Hospital News.—A new addition will be erected at St. Agnes Hospital, Fond du Lac, at a cost of $500,000. The plans provide for two complete units, one devoted to administration and operating departments and the other to patients.

Personal.—Dr. William A. Matushek has resigned as resident physician of the South View Hospital, Milwaukee.——Dr. Erroll V. Brumbaugh, former instructor in bacteriology, Marquette University School of Medicine, Milwaukee, has been appointed health officer of Madison.

PHILIPPINE ISLANDS

Society for the Care of Children.—The American Guardian Association was recently organized in Manila for the purpose of guarding and caring for children in the Philippines who are wholly or partly of American blood, and are without proper protection. Major Gen. Leonard Wood is honorary president of the association, and Colonel Johnson acting secretary. An appeal for funds is being made. The membership fee, including annual dues, is $10.

Philippine Lepers.—An investigation is being conducted by Dr. Victor G. Heiser, chief of the Far Eastern section of the Rockefeller Foundation, in an endeavor to ascertain the exact quantity of chaulmoorgra oil in the islands, so that this method

of treatment may be extended to all lepers in the Philippines. It is reported that among the 5,000 lepers on Culion Island there are five former American soldiers, who have not been included in the 300 or 400 who are receiving the chaulmoogra oil treatment. Gen. Leonard Wood has announced that he intends to see that all lepers on the islands receive the treatment. Thirty liters of oil per thousand patients is required per month.

GENERAL

Women's Medical Fraternity.—The annual meeting of Alpha Epsilon Iota, the woman's national medical fraternity, was held in Indianapolis, in March. There were nine initiates.

Health Conference.—It has been announced by the Surgeon General that the twentieth annual Conference of State and Territorial Health Authorities will be held at Washington, D. C., May 17-18, in conjunction with the U. S. Public Health Service.

National Catholic Hospital Association.—The annual convention of the Catholic Hospital Association of the United States and Canada will be held at Washington, D. C., June 20-23. Dr. John M. Cooper, Catholic University of America, Washington, is director of the exhibits and Dr. Bernard McGrath, Milwaukee, is secretary-treasurer of the organization.

Negro Health Week.—The eighth annual Negro Health Week was observed, April 2-8, under the auspices of the Annual Tuskegee Negro Conference and the National Negro Business League in cooperation with the U. S. Public Health Service, under the direction of Robert R. Moten, LL.D., head of the Tuskegee Normal and Industrial Institute, founded by Booker T. Washington, in 1881.

Immigration Committee Approves Deportation of Drug Pedlers.—The House immigration committee has voted favorably on Chairman Johnson's bill to provide for deportation of bootleggers and drug pedlers not citizens of the United States. The measure would add to the other offenses under which an alien may be deported and denied readmission, violation of any federal or state statute prohibiting or regulating the manufacture, sale, transportation or importation of intoxicants and drugs. Should the offender be imprisoned, deportation proceedings can only be started after his sentence has expired.

New Regulations for Liquor Prescriptions.—New regulations further limiting the use of liquor prescriptions by physicians are being drawn up by the Treasury Department. The new regulations, it is reported, will be in accordance with the terms of the Willis-Campbell bill, which prohibits the use of beer as a medicine and limits the amount of alcohol which may be prescribed to one-half pint in ten days and the number of prescriptions allowed a physician to 100 in three months. The Treasury Department is understood to be considering a change in the definition of a liquor prescription, to extend that classification to cover prescriptions issued for medical compounds of which alcohol is an ingredient as well as prescriptions for liquor, in computing the number which may be issued.

Legislation Proposed for Establishment of National Scientific Institute.—Establishment in Washington, D. C., under permanent federal support of an institution where problems of disease and health may be attacked cooperatively along general chemical, physical, biologic, pharmacologic and other necessary lines, with the object of mastering these problems for the common good of humanity, are the proposals of a bill shortly to be introduced in the House of Representatives by Representative Roy O. Woodruff of Michigan. Dr. Woodruff is a physician as well as a dentist and he asserts that the practical advantage of such an institution was demonstrated during the World War by the existence of the American University experimental station. In explaining the purposes of the proposed legislation Representative Woodruff said:

> Every single biologic change, in health and disease, is, in turn, fundamentally a chemical and physical process, subject to the rigorous exact laws of chemistry and physics. The problems of life and health, as safeguarded by medicine, are in their very nature so complex that rapid, successful advance demands the close cooperative effort of scientists of the highest type, each a leader in his field of science, willing to merge his talents and his efforts in the common problem for the common good. There is not, anywhere, a single organization whose purpose is a determined cooperative attack on the problems of disease and health, where intense chemical and physical research goes hand in hand with medical and biological study of disease. Thousands of lives are needlessly lost every day because of a lack of knowledge concerning chemical, physical and biological changes. Amazing results followed speedily the labor of expert chemists, physicists, biologists, pharmacologists and pathologists, from many sections of the country, while working in close cooperation and in conference hourly, under practically one roof, at the American University experimental station during the World War.

Bequests and Donations.—The following bequests and donations have recently been announced:

American Society for the Control of Cancer, $50,000, by the family of Mrs. Laske, New York City, in memory of her son, who died of cancer.

Miami Valley Hospital Society, Ohio, $50,000, to be used for the construction of a building for the treatment of deformed and crippled children, by the will of Mrs. Minnie Whitmore of Dayton.

Mount Sinai Hospital and New York Post-Graduate Hospital, each $25,000; Hebrew Orphan Asylum, United Hebrew Charities, each $5,000; St. John's Guild, $3,000; Hospital for Deformities and Joint Diseases, New York Society for Relief of Ruptured and Crippled, Manhattan Eye, Ear and Throat Hospital, New York City Home for Destitute Blind, Bellevue Hospital and Montefiore Home, each $2,500; Henry Street Settlement and Monmouth Memorial Hospital, Long Branch, N. J., each $2,000, by the will of Mrs. Julia Seligman.

Central Maine General Hospital, Lewiston, an additional $20,000 for the construction of a new wing by Col. Charles Osgood; the bulk of the estate of Charles Horbury of Lewiston, for the erection of a new wing.

Sisters of Charity of Incarnate Word, Galveston, Texas, three lots valued at $8,000 for a nurses' home, to be erected opposite St. Mary's Hospital, by Mr. Key.

Grace Hospital, Toronto, Canada, $5,000, in memory of his son, Dr. Stayner Ellis, by H. T. W. Ellis.

Sharon Sanatorium, Sharon, Mass., $5,000, for the endowment fund, under the will of Mrs. E. Florence Brett of Brockton.

St. Mary's Hospital, Cincinnati, $2,000; St. Francis Hospital, $10,000 in trust, by the will of Mrs. Katherine Reisser.

St. Anthony's Hospital, Rockford, Ill., $2,000, by the will of Mrs. Margaret Toms.

The New Hampshire State Hospital, Concord, $1,000, by an anonymous donor.

The Stillwater Sanitarium, Dayton, Ohio, the equipment and maintenance of an entire ward by the Exchange Club of Dayton.

The Harrodsburg Hospital, Kentucky, his collection of surgical instruments and medical library, by the will of Dr. William F. Pennebaker; also 585 acres of land and a large building for the establishment of a home and school for indigent girls.

FOREIGN

New Italian Medical Journal.—The first number of the *Gazzetta per il medico pratico*, a new medical journal published in Turin, appeared in December.

Tribute to Pestalozza.—At the conclusion of thirty years of teaching of obstetrics and gynecology, Prof. E. Pestalozza of Milan was recently presented with a testimonial signed by hundreds of his pupils and other friends, at a gala assembly in his honor.

Another Portuguese Journal.—Dr. Antonio Damas Mora, the public health officer of Angola, East Africa, has started the publication of a medical journal, *Revista Médica de Angola*. The first number contains a study of the epidemic of plague in Loanda in the early part of 1921.

Antiopium Campaign in China.—The president of China has appointed a special commission to proceed to Shensi, Kansu, Sinkiang, Jehol, Shuiyuancheng and other provinces, for the purpose of inspecting the alleged planting and cultivation of poppies in those districts, with a view to suppressing it.

International Otological Congress.—The tenth annual congress will be held, July 19-22, in Paris, France, under the presidency of Prof. Pierre Sebileau. Dr. Thomas J. Harris, New York City, is the secretary of the American Continuation Committee, and Dr. A. Hautant, 28 rue Marbeuf, Paris, is the secretary general.

Memorial to War Heroes.—At a special meeting of the New South Wales Branch of the British Medical Association, in Sydney, Australia, Dr. Fourness Barrington unveiled a tablet erected in the library of the branch in memory of the members of the medical profession of New South Wales who gave their lives in the World War.

Royal College of Physicians.—The roll of the Royal College of Physicians of London for 1922 includes the names of 367 fellows, 573 members and 14,177 licentiates. The senior fellow is now Dr. Peter Wallwork Latham (1866), the senior member is Dr. Clarence Cooper (1860), and the extra-licentiate is Dr. Edwyn John Slade King (1857).

Carnegie Hero Prize to Italian Physician.—The *Riforma Medica* relates that the Carnegie Foundation has awarded a silver medal to Dr. Silvio Porta, director of the public hospital at Recanati, Italy, because in January, 1919, he saved the life of a child of 3 with a grave form of diphtheria by aspirating with his own mouth the "pus" choking the child's trachea.

Physician Charged with Manslaughter.—In passing a sentence of twelve months' imprisonment on Dr. E. E. Willis of Durham, England, it is reported that the judge intimated that he took into account the professional consequences which

must follow on such a conviction. Dr. Willis was convicted on a charge of operating on a woman for eclampsia while under the influence of alcohol.

Kussmaul Prize for Sauerbruch.—The Heidelberg medical faculty has awarded the Kussmaul prize this year to Prof. F. Sauerbruch, chief of the university surgical clinic at Munich, for his achievements in surgery of the lungs. This year happened to be the hundredth anniversary of the birth of Kussmaul. A recent summary of Sauerbruch's work in surgery of the lungs is given on page 1091.

Portuguese Medical Association.—The Portuguese Medical Association recently elected the following officers: president, Carteado Mena; vice president, Almeida Garrett; first secretary, Oliva Teles; second secretary, Martins Barbosa; treasurer, Eduardo Reis; member, Roberto de Carvalho; speaker, Mendes Corrêa; vice speaker, Costa Miranda; secretaries of the house of delegates, Abel Pacheco and Luiz Côrte Real, Sobrinho.

Honors for Physicians.—Dr. Mary Alice Blair and Dr. G. K. Bowes have received the Order of Saint Sava from the king of the Serbs, Croats and Slovenes, in recognition of their services with the Serbian Relief Fund and during the war.——Dr. Edith Brown of the Zenana Bible and Medical Mission, for twenty years principal of the Women's Christian Medical College, Ludhiana, Punjab, India, has had the honor of fellowship of the Punjab University conferred on her.

Milk Control in Japan.—At a special meeting of the special sanitary committee of the Central Society of Zootechnics, including Drs. Asano, Karasawa, Iwazumi and Nishisaki, in January, at Tokyo, the following resolutions regarding the improvement of milk control were adopted: (1) improvements of the quality of the milk; (2) better dairy accommodations; (3) classifications according to quality, and (4) control of the price by the direct supply of milk from the farms.

University of London.—Professors in the Faculty of Medicine, University of Paris, gave advanced lectures in medicine (in French) at the university during March. Prof. H. Roger, dean of the faculty, spoke on "Les Fonctions du Poumon"; Prof. A. Chauffard read a paper on "Syndrome Humoral de la Goutte," and Prof. P. Duval gave a lecture on "Données actuelles de la Chirurgie Intra-Thoracique. Three other lectures will be given by French professors at the Royal Society of Medicine in May.

Dermatology and Syphilography Congress at Paris in June.—The French Dermatological Society has organized a congress of French-speaking dermatologists and syphilologists to convene at Paris, June 6 to 8. The meetings are to be held at the Saint-Louis Hospital, the mornings devoted to demonstrations, the afternoons to reports and discussions on the three themes: epidermomycoses with exception of favus; venereal inguinal ulcers originating in lymph glands, and the colloidal reactions in syphilis, including the colloidal gold, mastic and colloidal benzoin reactions. Dr. Hudelo, 8 rue d'Alger, Paris, is in charge of the arrangements. The fee is 60 francs.

Tribute to Mangiagalli.—Professor and Senator Luigi Mangiagalli was the moving spirit in the foundation of the Milan medical graduate school and has been influential in promoting the interests of the other university centers of Italy, in public health matters, and the interests of the profession. On April 9 there is to be inaugurated at Milan a Mangiagalli Foundation to provide scholarships in the Milan medical graduate institutes, in honor of the fortieth anniversary of his assuming the chair of obstetrics and gynecology. This was at Sassari, but for many years he has been connected with the University of Pavia, as well as the clinical institutes at Milan.

International Committee of Experts on Disablement.—A meeting of this committee was recently held in Geneva, Switzerland, and was attended by representatives of organizations concerned with disablement in Germany, Austria, France, Great Britain, Italy and Poland, and representatives from the League of Nations and the League of Red Cross Societies. It was urged that a single institution of international character, which would collect and present information and hold international exhibitions of artificial limbs and other orthopedic instruments, be established. The International Labor Office was invited to organize a traveling exhibition, which should be lent, in turn, to each of the national associations for disabled men.

Cajal's Retirement.—Cajal will reach the retirement age on May 1, and a committee has been organized in Spain to organize a national demonstration showing the high regard in which the famous scientist is held. Both Dr. Recasens, dean of the Madrid Medical School, where Cajal teaches, and Dr. Royo Villanova, rector of the University of Zaragoza, where Cajal was born, suggested independently and practically at the same time, that proper steps be taken in the matter. An organizing committee was appointed, the president of which is Dr. C. M. Cortezo, president of the Royal Academy of Medicine, and the secretary, Dr. G. Pittaluga. The plans of the committee include a special edition of Cajal's works, the construction of a monument and an increase in the appropriation allotted by the government for the maintenance of the Instituto Cajal.

League for Mental Hygiene in Belgium.—The *Informateur des Aliénistes et des Neurologistes* comments as follows on the recent foundation in Belgium of a Belgian Ligue d'Hygiène Mentale: "Our friends in America must be well satisfied to see the psychiatrists and sociologists of old Europe following the furrow which they plowed open so fortunately and successfully. Under the influence of the liberal ideas which have presided in this new orientation, the care and treatment of the insane and of psychopaths in general are now undergoing a transformation everywhere." Belgium is the latest to fall into line, the new league there being modeled on the French league, as this was modeled on the United States organization. The officers of the Belgian league, which is already at work, are Dr. Vervaeck, president; Dr. Hoven, secretary, 11 rue de la Reinette, Brussels, and a board of nine members.

Radium in the Congo.—The *Scalpel* of Brussels quotes the bulletin of the Belgian Chemical Society to the effect that the sample of minerals from the Congo assayed by Professor Schoep of the University of Ghent yield 424 kg. of uranium and 139 mg. of radium to the ton. The minerals came from the Upper Katanga, in the concession of the Union Minière which has entrusted the industrial treatment of the uranium to the Belgian Société Générale Metallurgique de Hoboken, which has put up a factory for the purpose in the Antwerp district. Other deposits of the same minerals have been found at other points specified, and Professor Schoep has found two new kinds of minerals among them, extremely radioactive. He has named one "curite" and the other "kasolite," and announces that the crystals are soluble in nitric acid, and the radium salt can then be extracted from the fluid without passing through the usual calcination process.

Centennial of First Hysterectomy for Cancer.—Professor Zweifel writes to the *Münchener medizinische Wochenschrift* to recall the pioneer work of J. N. Sauter of Constance, a surgeon of 34, who exactly one hundred years ago removed the whole of a cancerous uterus, the first time this had ever been attempted. His patient lived free from recurrence for four months, succumbing then to an intercurrent disease. Langenbeck had removed a prolapsed cancerous uterus before this, but Sauter attacked the uterus in situ, the pains and bleeding having rendered the woman desperate during the six months the malignant disease had been recognized. Even at that date, a hundred years ago, Sauter, in reporting the case, denounced "the prescription writing and nonexamining physician" for having allowed the disease to reach such an advanced stage. Sauter had been studying for four years the feasibility of hysterectomy in these conditions, but hesitated long and yielded at last only to the pleading of the patient. With the discovery of antisepsis, Zweifel adds, the seed thus planted by Sauter fifty years before began to sprout.

Deaths in Other Countries

Dr. **James George**, surgeon during the Crimean War, who gave up the practice of medicine to take holy orders; died February 16 in England, aged 96.——Dr. **A. Désiré Waller**, director of the Physiological Laboratory, University of London, died March 11, aged 65.——Dr. **Benjamin Moore**, Whitley professor of biochemistry, University of Oxford, England, formerly professor of physiology, Yale University School of Medicine, New Haven, Conn., died March 3, aged 55, from influenza.——Dr. **H. Guilleminot**, professor of physiotherapy at the University of Paris, a leader in electroradiology and one of the group that publish the *Journal de Radiologie*, author of "New Horizons of Science" and "Matter and Life," aged about 55.——Dr. **R. Lussatto**, professor of pharmacology and toxicology at the University of Modena, and writer on biologic chemistry, etc.——Dr. **R. de Ascue e Iribar** of Tolosa, Spain, aged 81.——Dr. **Duboys de la Vigerie**, secretary of the French Ophthalmologic Society, aged 70.

Government Services

Rehabilitation for Ex-Service Men

In California a definite scheme is being worked out for land settlement by the U. S. Veterans' Bureau, in cooperation with the California Land Settlement Board. Ten trainees in agriculture are now at Delhi and have taken up dairy, fruit and poultry farms.——The laundry industry offers a wide field for ex-service men who are competent to act as superintendents of laundries or foremen of the various departments. There is a constant demand regardless of season or industrial conditions for skilled mechanics.——In Florida, it is reported that 275 men are being trained in state universities and hundreds of others in industrial courses. ——A bill was passed by the New York Assembly recently, appropriating $1,000,000 for the relief of disabled, unemployed soldiers. Married or single men with dependents will receive $45 a month and single men without dependents $30, provided they have been unemployed for fourteen days and their federal claims have not been settled. The maximum any veteran would receive is $250.——The U. S. Veterans' Bureau, South Bend, carries on a joint employment bureau with the American Red Cross, the Federation for Social Service and the American Legion.

Veterans' Hospitals Transferred to Bureau

President Harding, according to unofficial advices, will shortly issue an order transferring sixty hospitals for the treatment of disabled war veterans from the U. S. Public Health Service to the U. S. Veterans' Bureau. The order will effect a change in authority supervising more than 80 per cent. of the patients in government institutions. After the change the personnel of the hospitals will remain the same, the present superintendents and medical personnel continuing under the U. S. Veterans' Bureau's jurisdiction. All of the new hospitals for ex-service men now under construction by the Treasury Department will also be included in the transfer when completed. The number of disabled veterans being treated at the various hospitals, the nature of their disability and the kind of hospitals in which they are quartered are shown in the accompanying table.

NUMBER OF VETERANS IN VARIOUS HOSPITALS, AND NATURE OF DISABILITIES

Hospitals	General, Surgical and Medical	Neuropsychiatric	Tuberculosis
U. S. Public Health and Veterans' Bureau	4,799	2,787	9,949
Army	752	71	1,033
Navy	980	282	30
Soldiers' homes	720	972	1,244
Contract hospitals	2,181	1,379	3,056
Total	9,432	5,491	12,312

Langley Bill Passes House

Appropriation of $17,000,000 to furnish additional hospital facilities for disabled war veterans has passed the house without a record vote. The measure known as the Langley bill places the authority for the expenditure of the appropriation in the hands of the director of the U. S. Veterans' Bureau, with powers to select sites and draw up plans for new buildings and for the remodeling of existing structures. At present the Treasury Department architect supervises the planning and construction of hospitals. An amendment added to the bill gives the President authority, by executive order, to transfer to the Veterans' Bureau any buildings under the jurisdiction of other departments of the government but no longer used by them, to be remodeled into hospitals. The measure went to the Senate.

Favorable Report on Hospital Construction

Chairman Langley of the House Committee on Public Buildings and Grounds made a favorable report to the house this week on the bill providing for the construction of additional hospital and outpatient dispensary facilities for disabled war veterans. The sum fixed in the bill is $17,000,000, to be immediately available.

Foreign Letters

PARIS

(From Our Regular Correspondent)

March 10, 1922.

Treatment of Varicose Veins with Direct Obliterating Injections

By giving intravenous injections of a neo-arsphenamin compound particularly rich in sodium, Dr. J. A. Sicard, associate professor of the school of medicine of the University of Paris, noticed that the neo-arsphenamin substance had an obliterating action on veins. This gave him the idea of using sodium carbonate to obtain obliteration of a vein as a means of curing varicose veins of the lower limbs. He uses a 10 per cent. solution of crystallized sodium carbonate, sterilized in an ampule made of hard glass to prevent the action of alkali on the glass. The injection of from 10 to 20 c.c. must be made directly into the varicose vein, as any diffusion of the liquid in the perivenous tissue may entail slough which would take long to cure. The injection is not painful if it is not made too rapidly and if the constrictor is taken off while the injection is being made. It must be repeated every two or three days, and daily if necessary. From five to twenty injections are generally needed to cure a varicose vein of minimal development. This process, which has the advantage of allowing the patient to attend to his daily occupation, was becoming generalized in France, until Sicard published the report of a fatal case occurring in the practice of one of his colleagues: A first 10 c.c. injection of a 10 per cent. solution of sodium carbonate was given to a woman, aged 59, who had large varicose veins on the leg. Everything went smoothly, and the usual reaction was noted, without phlebitis. Three days later, a second injection was made a little higher. The patient worked that day, but the next morning, while lacing her shoe, she died suddenly. As a necropsy was not performed, it was difficult to say whether or not death was due to embolism.

Sicard admits that if safety demands that the patient remain in bed after the injections, his method would lose much of its value. However, sodium carbonate is not the only substance that can be used to obtain curative sclerosis of varicose veins. Dr. Genevrier, while making intravenous injections of quinin salts against malaria, noticed that the injections brought about induration of veins. He then made use of this discovery in the treatment of varicose veins. The technic for these injections is described by Dr. Cheinisse in his new book, "Année thérapeutique" (Paris, 1922, Masson et Cie). He begins by making, at the root of the limb, a moderate compression with a rubber tube, and paints the course of the vein with a 5 per cent. solution of tincture of iodin. He then injects each varicosed vein and each varicose nodule (the syringe having a fine and sharp needle, preferably of platinum), every 7 or 8 cm., with one or two drops of a solution containing 0.4 gm. of quinin hydrochlorid and 0.2 gm. of ethyl carbamate to 1 c.c. of physiologic sodium chlorid solution. Finger compression of the vein above the puncture localizes the irritative action and also increases its intensity. Both legs may be treated in this manner at one sitting, provided the patient remains recumbent and at rest for two or three days. If he does not wish to stay away from his work, the injections can be made at intervals, depending on the development of the lesions and the age of the patient. The only precaution to be taken is not to let one drop of the quinin solution run out of the veins, as this would cause a severe inflammatory reaction. On the other hand, Dr. J. Montpellier and A. Lacroix of Algiers have just recom-

mended, as a means of obtaining the curative fibrosis of varicose veins, the injection of a 5 per cent. aqueous solution of red mercuric iodid—commonly used in syphilis. Red mercuric iodid possesses the obliterating qualities of sodium carbonate, but not its disadvantages. The patient is recumbent, and an elastic tourniquet placed around the leg to make the nodules stand out prominently. At the site of the injection the vein is punctured with a fine needle attached to a syringe containing 2 c.c. of solution of red mercuric iodid. The tourniquet is loosened and from 0.5 to 1 c.c. of the solution is injected slowly. When the varicose veins are small, a transformation of the vein into a hard cord, in which there seems to be no circulation, is noted twenty-four hours afterward. In the case of large varicose veins, the reaction does not manifest itself before the fourth day at the earliest, the fifteenth day at the latest. Montpellier and Lacroix believe that these injections might also be useful in the treatment of certain disfiguring telangiectases, nevus angiomas, cirsoid aneurysms and, perhaps, arteriovenous aneurysms.

Pharmaceutic Specialties and Medical Societies

Dr. Guillon recently told one of the medical societies of Paris of a preparation with which he had obtained excellent results in the treatment of chronic urethritis. Dr. Guillon did not give the name of the preparation, but gave its chemical composition. One of the members asked Dr. Guillon to state the name of the preparation. This request brought about a general discussion on the subject of whether one may speak freely before a medical society regarding a preparation that has given good results, without being suspected of advertising the product. Dr. Maurice Cruet in the *Journal de médecine de Paris* points out that, owing to the evolution of therapeutics and the difficulty in preparing and presenting a great number of products, specialties are needed. Physicians should not prescribe only proprietaries, but they should be used when the patient's welfare demands their use. Dr. Cruet called attention to the fact that physicians are using proprietaries daily, perhaps without being aware of it. They bear a special patented name and no one has the right to use it except the manufacturer. It is true that they are chemical products whose formula is well known, and hence they are not secret remedies. However, Cruet believes that it is our duty to be on the lookout for good medicaments and to listen to colleagues who have made use of such a product and obtained good results. Another question to be answered in this connection is: Can the name of a proprietary mentioned before a medical society be published in the transactions of the society? The transactions of a medical society might then be interpreted as an official recognition given to the proprietary. Curet was willing to consent to such publication, on the ground that such transactions "published in a medical journal are read only by physicians." But every-day experience shows the fallacy of such an argument, because manufacturers of proprietaries do not hesitate to use such statements to advertise their products. Cruet made another argument which does not seem to be any more convincing. All medical journals, even the best, accept advertisements of proprietaries; hence it seems as if the journal were endorsing the product. In reality, however, there is more than a slight difference between an advertisement and a communication printed in a medical journal. We could go further and demand from medical journals a certain control even as regards advertisements. This would be a means of improving the industry of pharmaceutic specialties as it is being tried in the United States, thanks to the tireless efforts of the American Medical Association. Cruet admits that therapeutics is overcrowded with thousands of specialties, most of them absolutely useless, some harmful, while others, on the contrary, are useful, scientific and indispensable. The physician must know how to choose, and Cruet believes that the easiest way to accomplish this is to ignore any specialty advertised before the public in the daily press or by any other means. However, this solution is not entirely satisfactory; for not all products to which the manufacturers are trying to attract the attention, not only of the public but also of the medical profession, are always irreproachable. Nevertheless, it is to be regretted that medical journals do not always discriminate as regards advertisers. In a previous letter I mentioned a striking example of the shamelessness of "patent medicine" manufacturers (THE JOURNAL, Jan. 7, 1922, p. 43). On the other hand, the editorial published in the *Journal de médecine de Paris*, concerning Dr. Cruet's article, is not less suggestive. The editorial tells us that the constantly increasing number of medical journals "has forced them to be very diplomatic with advertisers. . . . You could not believe how we are threatened by some of our advertisers, when, by accident, the name of a competitive product is mentioned in an article." This admission shows clearly the abnormal control that some manufacturers of pharmaceutic specialties have of certain medical journals.

BUCHAREST

(From Our Regular Correspondent)

Feb. 15, 1922.

The Housing of Agricultural Laborers

Dr. Constantinescu, the president of the Housing Committee of the Public Welfare Office, recently delivered an address on the housing of agricultural laborers. He said that the necessity of better housing for the working classes in the rural districts is as great as if not greater than in the crowded cities of the country. Those who are acquainted with country cottages know that a large proportion of them are generally unwholesome. What better criterion could be wanted than the average health of the country laborer and his family? In spite of living under the best conditions so far as pure air, wholesome occupation and absence of excitement and temptation to excess are concerned, the rural family may nevertheless be said to be fairly riddled with tuberculosis, anemia, caries and other crippling and disabling diseases. The source of the mischief is the cottage in which they live. In many instances, laborers live under one roof with their domestic animals, cows, pigs, etc. Inquiry will reveal that the typical dwelling of the old-fashioned kind is damp, unventilated, ill drained, overcrowded and altogether unworthy of even a moderate modern standard of sanitary fitness. In many districts the supervision of cottage property is either a mere farce or nonexistent. Even were an active house-to-house supervision exercised, it is doubtful whether either inspectors or medical officers of health would be able to withstand for any length of time the constant friction likely to occur between them and cottage owners. Most of the appointments named are held for only a limited period. Insecurity of tenure in itself would be sufficient to rob the rural district authorities of the greater part of the working efficiency of the powers they already possess under the public health act and the housing of the working classes act. The committee of which Dr. Constantinescu is the president is going to elaborate a new law to be sanctioned by parliament to the improving of the housing of agricultural laborers.

The Connection of Organic Diseases with Lesions of the Sexual Organs in Women

In addressing the Medical Society of Bucharest, Dr. Ivanescu said that, in harmony with Galt's experiments on animals during the term of rut, conception and labor, the connecting link between the sexual organs and other organs under physiologic and pathologic conditions is not the ner-

vous system but the circulatory system. As we know, the products of the internal secretion of the ovaries are carried away in the vascular tracts and there set up changes in the organs. The whole metabolism of the female (blood pressure, body weight, quantity of the urine) corresponds with the periodic course of sexual processes (menstruation, gravidity, etc.). It is the blood that is the intermediary between the changes in the uterus and those in the breast. Those cases of chlorosis in which there is faulty development of the aortic system are combined with anomalies of sexual development, as stated by W. H. Freund in Germany. The appearance of hemophylia and scorbutic diseases during pregnancy is explained by the demands made on the vascular system by relatively high blood pressure. Diseases of the heart are explained partly by mechanical processes, increase of intra-abdominal pressure, and partly by mechanical injury done to the endocardium, preparing it as a soil for the development of bacteria. Embolism of the pulmonary artery in the puerperium and in diseases of females is explained by the impoverishment of the blood (increase of fibrin, diminution in numbers of red blood corpuscles) that takes place during pregnancy, and also in lingering illnesses. Diseases of the vessels are sometimes associated with changes in the genitals. Cerebral affections (hyperemias) depend more on the influence of the circulation than on that of the nervous system. Even in the psychoses that arise in connection with gravidity, the puerperium and lactation, the circulatory apparatus plays a certain part. The nervous system is the connecting link, moreover, in certain cases, such as neuralgias, in connection with tumors, etc., and in reflex cramps and paralysis and puerperal polyneuritis. As regards hysteria in connection with pelvic disease, he looks on this as only the predisposing cause. Here heredity and unsuitable education also play an important part.

Phosphorus Necrosis

Dr. Levai, medical inspector of the Transsylvanian works, contributes an article in the *Erdelyi Orvosok Lapia*. This disease, he writes, is much more rare than in 1878, when the death rate among workers of yellow phosphorus was one in 413, whereas now, by the use of the red phosphorus, it is reduced to one in 2,400. Since the restriction of the trade using yellow phosphorus, the trade has greatly diminished. It was in 1845 that Lovinser published reports of his first case, which Bogdanik supported although his patients had bad teeth. Charles first observed the necrosis of the periosteum of bone. This was soon succeeded by two postmortems, one on a youth of 18 who had had his left ankle crushed. The wound was followed by nosocomial gangrene that necessitated amputation, but the periosteal destruction soon reached the trochanter. In the postmortem the shaft of the femur was involved in the necrosis, with hyperostosis of the cranium and ossifying periostitis in the alveoli, in the epiphyseal and apophyseal ends of the long bone, while other purulent centers were observed up and down the organism. Rose, about the same time, had a similar experience with another postmortem in which cortical changes were observed. Wegner then began experimentally to keep guinea-pigs in an atmosphere of phosphorus, with the result that the periosteum of the jaws and tibia became affected. Levai next relates his own experience, giving examples to show the course of the disease. A woman, aged 24, entered the hospital, Oct. 30, 1912, with pain in the upper jaw which had already existed one month. The gum was swollen and red, through which the sound struck against the bone. In January, a piece of the bone was removed, with a number of the teeth. The condition of the teeth in this case was strong evidence that phosphorus was not the only cause, although the patient worked in a phosphorus factory. After reporting sixteen cases with pathologic examples, he concluded with the remark that the necrosis is not caused by local irritation, as often assumed, but is effected through the blood, as the clinical evidence proves. The vessels become thrombic as if closed by dust, and portions die in wedges or cones. If bad teeth are present, the condition may have an infectious appearance. From the foregoing it will be noticed that the necrosis is less frequent in the upper than the lower jaw, and that it is more circumscribed owing to the greater anastomosis of the upper blood vessels. The long bones, for the same reason, are also seldom affected except in syphilis. As preventives, all factory hands should have different clothes for home wear, and before meals should wash their hands with oil, then warm water and soap, and finally with a permanganate solution. All teeth should be carefully watched.

VIENNA

(From Our Regular Correspondent)

Feb. 26, 1922.

Inquiry Regarding Cancer in Austria

In 1921, the Austrian Society for Cancer Research issued to the 6,000 practitioners in this country a leaflet asking them to answer a series of sixteen questions: Had the reporter observed any influence exerted on the appearance or frequency of cancer by the character of the house or soil, the kind of nutrition, or customs, or heredity or transmission? Had he observed frequency of such cases in certain houses or groups of such; among members of a certain occupation or profession, or in certain families (pedigree) or among married couples? Had he observed cases among persons below 40 years of age, different kinds of malignant growths in one family, one vocation, etc., variation of a benign growth into a malignant one, correlation of constitutional disease and malignant growths, etiologic relation between cancer and local syphilitic or tuberculous lesions or scar tissue or burns, or trauma? Did he notice any correlation between cancer of the mamma and lactation with virginity, cancer of the uterus and virginity, gestation or abortion, between gestation and development, metastatic growth of malignant disease; the influence of fever upon neoplasms? Did he observe early cachexia in small but very pronounced tumors? What was the fate of the cases after operation? Did they remain cured or had they any recidives? Did a primary tumor occur later on? Did he know of a medical treatment of cancer (folklore, quacks)?

As only 389 physicians responded (6.5 per cent.), this inquiry could not claim to be more than a mere casuistic collection, although the answers comprise an exhaustive investigation of the observations obtained in surgical wards and clinics. It appears that we are not entitled to surmise the existence of real "cancer houses"; but as regards occupation, it is a fact that waiters and public house owners show a high mortality of cancer of the alimentary tract (esophagus). Interesting data were obtained as regards the appearance of cancer in families. In ninety-two families, multiple cases were noted, among them, thirty-four families where all offspring suffered from malignant growths. In seventy-five instances, cancer was traced over four generations; in three instances, over three generations. A family suffering from gliomas, the father of which died of sarcoma of the humerus, is most interesting. Two generations suffered from it. Still we are not yet in a position to elucidate the actual conditions of heredity, nor can it be stated that the cases of "cancer à deux" in married couples are more frequent than we ought to expect. No stringent proof of the noxious or other influence of soil or of nutrition could be obtained from the investigations and answers received to these questions. More insight is obtained as regards age.

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More than 700 cases of cancer and sarcoma were reported on, and it can be stated that about 10 per cent. of the men, and about 14 per cent. of the women were below 40.

If we consider cancer of the genital organs, 25 per cent. of the female patients were below that age. The youngest was a girl of a year and a half (cancer of the liver). In one of 9 years, there was cancer of the ovary. The youngest patient having cancer of the stomach was 16 years of age, while a boy 39 days old who was observed privately was said to have been born with the tumor, a sarcoma of the femur. It seems that the juvenile cases were a little more rapid in developing, and that warts, scars and burns can be irritated to rapid growth and to degeneration by traumatic impulses, even by simple excision. A definite relation between new growths and debilitating diseases could not be proved, nor any special disposition of any race (or creed), but well observed cases were reported in which cancer developed on a basis of old gumma, plaques, or syphilitic scars, or in which constant irritation by a carious tooth was present. Frequently trauma was mentioned in the etiology of a cancer, superficial or deep seated; also sarcoma was very often traced to trauma, especially in cases in which the limbs were affected. In these cases, 15 per cent. were of traumatic origin, according to the history. It appears that trauma is at least a serious predisposing cause. The relation of virginity and pregnancy to neoplasms can only be suggested, as cancer of the collum uteri is frequent in multiparous women. Exhaustive researches of the case histories in both gynecologic clinics in Vienna have shown that multiparous women are affected at a greater age by cancer of the uterus than women of no or few pregnancies. The problems require further investigation. The cure of cancer by erysipelas or fever-producing disease could not be proved. Epitheliomas of the face and cancer of the mamma are said to give a good prognosis in such an event. Scientific investigations, however, could not prove the case. The reverse was observed several times in von Eiselsberg's clinic. As regards the prognosis of the cases in which operation is performed versus those in which it is not, pessimistic feeling prevails. In the first gynecologic clinic, Professor Thaler could show that 38 per cent. of 2,000 patients operated on were living after five years; also that patients having cancer of the rectum could be saved, and some were alive after eight to eighteen years.

Mammary cancer also gives a bad prognosis, only a few of these patients being alive after five years. Recidivation occurred in many instances after from five to ten years. Repeated operation in such recidives in many instances resulted in a cure. Frequent reports were made concerning the reappearance of cancer many years after removal of a cancer of the breast or uterus or face. Such cases must be regarded not as metastatic, but as a manifestation of a carcinomatous disposition leading to the same disease in different localizations, a true reappearance of a primary tumor. On the other hand, several competent observers reported that patients with undoubted carcinoma or sarcoma (microscopic examination) remained comparatively well for years, without operation; medical treatment is of sufficient effect with them perhaps owing to a very low virulency of the tumor. Folklore and quackery still play a prominent part in the treatment of this condition, especially in the country, where the rural instincts of the population make the people shrink from surgical interference. Decoctions of violet, ointments consisting of wax, camphor, turpentine and various herbs, as well as mystic ingredients (powder of a mouse roasted alive or of the bones of a stillborn baby, or of the teeth of executed culprits) are recommended, in spite of the progress of the twentieth century. But no real benefit has been hitherto obtained from any treatment other than surgical. Radiology has not been considered in this inquiry.

Antialcohol Movement in Austria

An energetic campaign against alcohol has been organized both by the union of total abstainers and by medical-political circles, to which the government has had to give its consent "nolens volens." The chief cause for the sudden fight is to be found in the alarming increase of national expenditure for alcoholic drinks. A sum equaling the total expenditure of this country for administration has been spent in wine and beer alone. It is characteristic that it is the working classes chiefly who are responsible for this squandering of more or less hard earned income. With the rapid increase of wages—they are nearly 1,000 times as high as in peace time—the manual worker has turned to alcohol. It is a most serious blunder and a crime on the part of their politicians that the working classes have not been led to use their improved financial position for the attainment of a higher standard of life, in the shape of education and moral qualities, but have been allowed to drink. And as the majority of these liquids come from abroad, the money is altogether lost to the country. By cooperation of the organizations interested, the following lines are to be followed, until the country can be made completely dry: increase of the duties on imported alcohol to such an extent that the majority of the people cannot afford to buy, gradual reduction in the number of licenses of public houses and wine and beer stalls, restriction of the production of gin, whisky and liquor in the country, and transformation of vineyards into plough land. The second line of attack aims at the instruction of adolescents and youths by means of antialcohol lectures and exhibitions, and at influencing schoolchildren, as well as promoting these tendencies by giving premiums in factories, in agricultural circles and among women. Medical men will be encouraged to inform the population of the dangers to their offspring produced by alcohol. A sum of 50,000,000 kronen has been granted by the government for this purpose. Besides, the political parties have pledged themselves to exert an active and effective pressure on their followers along the same lines. The social-democratic party especially is quite alive to the danger arising out of present conditions.

Medical Examination Before Marriage

Some time ago, Professor Tandler, ex-minister of public health, suggested the introduction of a method of medical control of persons desiring to marry. As it is impossible at present to introduce a compulsory system of control for such persons, the magistrates of Vienna have decided to institute a facultative marriage permission; any person desiring to do so, will be in a position to obtain a fully competent certificate by a specially appointed medical officer, stating whether the applicant is healthy and free from disease transmissible to his presumptive partner or his children. Or, if he is found to be not fit or not yet fit for marriage, he is advised to postpone the ceremony until he is cured or to abandon the idea entirely. Of course, the application for such an examination would be free from any charges. If the examining medical officer should find it necessary, specialists would be consulted, who would give their report to this officer. In cases requiring a more complicated examination, a small committee of specialists would be asked to interfere. If the population should patronize this institution—it is hoped that the female partners will gladly avail themselves of this opportunity and demand such an examination also on the part of the would-be husbands—it is intended to appoint a woman physician also, who could be consulted by the women if they preferred. As the women are the chief sufferers from the effects of ill health, either by being infected by their husband or having to care for children who have inherited poor health, it is thought that this safeguarding of oneself will find much favor with them. Naturally, absolute profes-

sional secrecy is guaranteed. Professor Tandler is convinced that by being accustomed to such a preliminary examination before marriage, the population would, after a few years of voluntary submission to the idea, be imbued with the impression that marriage is not only a religious and juristic but also a social function, requiring judicious consideration for the coming generation. The magistrates of Vienna have devoted a sum of 300,000 kronen for the year 1922 for this purpose; the working out of this new departure will be watched with great interest by both the profession and the sociologists. It must not be omitted that a strong feeling prevails in many influential quarters that not so much the control of marriage is to be aimed at, but rather the control of the offspring, i. e., that couples not fit to produce healthy children or to bring them up in a healthy state should be allowed to produce abortion at an early stage.

PRAGUE

(From Our Regular Correspondent)

March 1, 1922.

Congress of Insurance Organizations

A general congress of insurance associations took place in Prague February 20-22. Representatives of all nationalities of the republic were present speaking in the name of more than five million insured persons who represent approximately three fifths of the total population of Czechoslovakia. The congress held its sessions under the chairmanship of Deputy V. Johannis. In a resolution, which has been adopted unanimously by the congress, the government was urged to accelerate as much as possible the bill on invalid and old age insurance which is being prepared by the ministry of social welfare. The lack of such a law is a heavy burden on the insurance associations, because those who would properly come under an old age or invalid insurance are kept under sickness insurance and thus help to exhaust the funds which already have been greatly reduced by unemployment and the epidemics of influenza. Steps have been taken to concentrate the system of insurance which has grown, up to now, along the lines of politics rather than those of practical need. The most important feature of the congress from the medical standpoint has been the stress which the representatives laid on the improvement of the medical service under insurance. It has been expressly emphasized that the associations have to consider their chief task at the present time to be the prevention of disease, for which tasks the machinery has yet to be developed. The concentration of different local associations will make it possible to create clinics and dispensaries for special treatment, such as hydrotherapy, roentgen-ray stations, phototherapy, and dental clinics. Special attention is to be paid to homes for convalescents, those suffering from nervous diseases, and the tuberculous, the proper treatment of whom will save enormous sums to invalid insurance hereafter. The congress has taken a firm stand against the free choice of physicians which the medical organizations wish to have introduced. The associations are afraid that this would mean financial ruin of the system because it introduces uneconomical methods and makes proper concentration practically impossible.

Association for Protection of Mothers and Infants

Up to date, there have been four national child welfare organizations in Czechoslovakia. The oldest one, which dates from Austrian times, is the National Committee for Child Welfare. During the war, an association for the protection of mothers and infants was organized. The American Relief Administration, which came to Czechoslovakia shortly after the end of the World War, organized on a large scale the feeding of undernourished children through special local commitees. It can be said with justice that this organization saved the lives of thousands of children in the times of the after war famine in Central Europe, and therefore won a considerable reputation. A year ago, the American Red Cross sent to Czechoslovakia a mission under Dr. H. O. Eversole which has had the task of bringing chiefly medical relief to the children who have suffered from the war. Since then, twenty-one model health centers for children have been organized in county cities. It can be seen from the foregoing that four more or less independent organizations for child welfare grew up; naturally a need for concentration began to be felt. Under the National Council of Social Hygiene, which is the central federation of the most prominent Czechoslovak private health and social agencies, a scheme for coordination has been worked out which is under way and has excellent chances of realization. The National Committee for Child Welfare has not been taken into the plan because its functions are chiefly social, whereas the rest of the organizations are primarily health agencies. The Association for the Protection of Mothers and Infants is working on a change of its by-laws which will make it possible for it to include in its program not only mothers and infants but also children up to 14 years of age. The question of feeding undernourished children will be especially emphasized in the by-laws so as to insure the continuity of the work which the American Relief Administration has been doing in the critical times for Czechoslovak children. As the work of the American Red Cross is to be taken over by Czechoslovak authorities in July of this year, this reorganization of the Association for the Protection of Mothers and Infants will make it possible to fuse with this organization also. In this way, two strong organizations for child welfare will be created, one of them for social and the other for health problems of the care of children. The new child health organization will be called the Association for the Protection of Mothers and Children and will be granted a large subsidy by the ministry of health, as it would not have sufficient financial resources for its big tasks in any other way.

BERLIN

(From Our Regular Correspondent)

March 11, 1922.

America's "Oriental University"

The Oriental University, so called, which, we understand, holds its charter under the state of Virginia, has during the last few years cut something of a swath even here in Europe. It first became known in Berlin a few months ago, in connection with the arrest of Professor W——, who is accused of endeavoring to obtain fraudulent possession of portions of certain estates by the practice of occultism, which illustrates the fact that one swindle often supports another. The investigations into the character of the Oriental University, which were made in connection with the foregoing case, have unearthed the fact that there are in Germany several persons holding diplomas issued by this institution. Among these is a certain Mistelsky, one of the most pernicious quacks in Berlin, who secured even the title of "professor" from the Oriental University; a Dr. Fischer, residing in a small town in Pomerania, which happens to be known as Rudolf Virchow's birthplace, and some others. The investigations revealed also the fact that the Oriental University has had its agents at work in Switzerland for some time and that they have clashed with the authorities there because of their shady practices. In the office of the state's attorney at Zurich are copies of sworn statements made by Holler, the president of the Oriental University in Washington. Holler maintains that the Oriental University possesses the legal right to grant academic degrees. Besides serving as head

of the university, Holler is also a leader in a so-called theomonistic movement, and bears the title "Reverend Doctor Theodolithos, first theomonistic bishop." It is his purpose to found a theomonistic state, which he defines as "a practical, theocratic, patriarchal, communistic commonwealth, based on higher spiritualism." Holler regards himself as a medium, and maintains that he has had conversations with persons of antiquity. It is extremely regrettable that the state of Virginia should continue to protect with its name such a swindling institution, and thus allow the reputation of legitimate American institutions of learning to be tarnished in the eyes of Europeans, exerting thus much the same effect as the infamous Philadelphia University once did.

Extension of Sickness Insurance to the Family

For a long time, the members of the health insurance societies have been demanding that their families be included within the scope of social insurance legislation. It will be readily understood that physicians have resisted this demand because acquiescence in such a request would entail a still further and not inconsiderable limitation of free practice, with a consequent reduction of their income. The workingmen, who, since the revolution, have come more into the foreground, have now succeeded in getting their ideas accepted, and it looks as if the physicians would have to accommodate themselves to the innovation. In this connection, a large gathering of members of the *Aerztebund* (physicians' league) of Greater Berlin was held, a few days ago, at which the draft of a compact between the physicians and the executive committees of the health insurance societies was presented. One provision of the compact, which bears on the per capita compensation of physicians, is of paramount importance; namely, that, in the presence of a general epidemic, which entails increased service on the part of physicians, for which the fixed monthly fee would constitute very inadequate compensation, an increase in the allowance to physicians shall be made, which shall be based on the average normal service rendered during the previous four quarters. Also of great importance is the provision that, for the treatment of the families of volunteer members whose income is in excess of 40,000 marks, twice the customary fee must be paid by the health insurance societies. By this provision the health insurance societies have conceded the principle that the fees to be exacted from various classes of members need not necessarily be uniform. Violent opposition was aroused in the assembly by the provision of the compact which stipulates that the fee for the treatment of the family of a member shall be 1.75 of the regular fee; for physicians doubted whether such a payment would furnish sufficient compensation for loss of private practice. The compact, which for the present is to hold for only one year, was finally accepted by both sides, but the physicians declared that family health insurance could not be put on a permanent basis unless the additional payment was such as to make it possible for physicians to give careful treatment. Family health insurance is accordingly expected to be begun, April 1.

Draft of a New Law for the Combating of Venereal Disease

For many years, German physicians and German public health officials have endeavored to elaborate a law that would be more effective in combating venereal disease. The practical difficulties of the problem have stood in the way of an earlier promulgation of such a law. Owing to the war and to conditions that are the outgrowth of the revolution following the war, the need of such a law has been much increased, especially in view of the extraordinary increase of sexual diseases. A draft of the new law has recently been presented to the reichstag and has been referred to the *Bevölkerungsausschuss*, the committee of the reichstag that handles all matters pertaining to the restoration of the population of Germany. Certain measures of the bill are of special interest to physicians, namely, the created obligation upon venereal patients to allow themselves to be treated and furthermore their right to be treated; the prohibition of charlatanry; the making of venereal disease notifiable, under certain conditions, and the abolition of *reglementation*, or state regulation of the social evil. According to the provisions of this law, every venereal patient has the right to be treated, but at the same time there rests an obligation on him to request such treatment. Fortunately, only accredited physicians of the empire are entitled to give treatment. Section 2 of the bill reads:

> Any one who is suffering from an infectious sexual disease and has knowledge of the fact, or from his existing condition must naturally assume that such is the case, must present himself or herself to an accredited physician of the German empire for treatment.

Unaccredited persons or, in other words, quacks (who, since the passage in 1869 of the law granting unlimited liberty to practice medicine, have in general not been prohibited from treating venereal patients) are, by Section 6 of the bill, forbidden to treat for sexual diseases. The law prohibits also all treatment from a distance, by means of letters, printed matter and the like; that is, all treatment without a personal examination. Such a provision was necessary because there are unscrupulous physicians who advertise their services in the daily press. Of especial importance is the punishment to which a person affected with venereal disease exposes himself if he has sexual intercourse. According to Section 4 of the bill, any one who knows or, to judge from his condition, must assume that he is suffering from an infectious sexual disease and who, in spite of the fact, exposes another in the customary manner to the danger of infection is subject to imprisonment. Any one who knowingly provides treatment for a child who is suffering from venereal disease, without informing the parents in regard to the child's condition, also any one who gives syphilitic infants to healthy women to nurse, are liable to punishment. But, if it can be shown that the woman to whom a syphilitic infant was given to nurse is herself syphilitic, no penalty attaches to the act. Wetnurses are required to provide themselves with a certificate of health, which they can present when their services are under consideration. Advertising or recommending to physicians or pharmacists of drugs for the cure or relief of sexual diseases is not liable to punishment; but any form of public advertisement of such remedies that constitutes a menace to public welfare is punishable. It is to be hoped that this legislation will serve to suppress the advertising of remedies for the cure of sexual diseases, such as are regularly found in the lay press. Of great importance to physicians is the compulsory notification of venereal diseases, as mentioned above, in regard to which Section 7 says:

> Any one who gives medical treatment to a person who is suffering from an infectious sexual disease shall report the fact to the consultation center if the patient fails to keep up the treatment or if, by reason of his calling or profession, or his personal relations, he is a menace to other persons. If the patient does not comply with the instructions of the consultation center the fact must be reported to the proper public health authorities.

The foregoing provision was adopted only after much debate, and it will doubtless continue to be a matter of controversy, since varied opinions have been expressed in regard to the extent to which physicians are obligated to give notification. Some physicians think that only an anonymous notification is required, such as would suffice for statistical purposes. Others recommend that the names of patients be reported to a public health office, so that a definite record of every patient may be had, no matter whether it is absolutely needed or not. Most physicians are opposed to the latter form, partly because it will not, in their opinion, accom-

plish the desired purpose, and partly because it is not feasible. They urge that physicians would thus be overburdened with clerical duties and the patients would be more inclined than ever to consult pharmacists and quacks; furthermore, it would mean an additional heavy expense for the public health offices. The majority of physicians, therefore, favor a notification to the public health office or to a consultation center of the names of those patients who do not keep up their treatment, although the difficulties of even this restricted form of notification are by no means slight.

Of great general importance is the abolition of the so-called reglementation of prostitution. In recent years, prostitutes were compelled to register their names with the so-called *Sittepolizei*, or morals police, and were subject to regular medical inspection and police supervision. The *Sittepolizei* has now been abolished and a form of control has been substituted that has been in use for many years in the Netherlands, Norway, Switzerland, England, Denmark and Sweden. The experiences of these countries speak in favor of the abolition of reglementation. Attention has been repeatedly called to the fact that one bad feature of the reglementation of prostitution has been that medical inspection under police supervision gave the women concerned the right to claim that they were free from infection if they passed inspection, whereas the evidence goes to show that such was not necessarily the case. Furthermore, there is a general conviction that, among other reasons, owing to the wide development of manufacturing industries and the large number of persons out of work, the number of registered as compared with the number of clandestine prostitutes has been steadily growing smaller. For example, it may be noted that in Dresden there are only 250 and in Stuttgart only twenty-two registered prostitutes, whereas it may be assumed that there are hundreds—yes, possibly thousands, of clandestine prostitutes. According to the proposed law, only those who publicly and in such a manner as to offend against good morals and common decency urge others to commit unchaste acts or offer themselves for lewd purposes and those who, while leading a lewd life as a regular source of gain, do not comply with the regulations established for the supervision of professional prostitution, are liable to punishment. It is significant to note that these regulations affect men in the same manner as women, which is the result of a demand that was presented and contended for with great energy by the women of Germany. Since prostitutes are, in the nature of the case, open to the suspicion that they spread sexual diseases, they can, according to the proposed law, be compelled at any time to furnish a certificate of good health, to be examined, to accept treatment and, if necessary, to enter a hospital until they are cured. The consultation centers mentioned in the bill were established a few years ago by the communes and the *Landesversicherungsanstalten* in order that persons suffering from venereal disease might obtain gratuitous advice in regard to their condition and begin a proper course of treatment.

Marriages

JOHN JUDSON SALE, Lieut., M. C., U. S. Navy, to Mrs. Helen Ewell Bull, both of San Francisco, March 10.

NORMAN R. BYERS, Bedford, Ind., to Miss Phoda Elizabeth Trook of Indianapolis, March 15.

SAMUEL KAHN, Atlanta, Ga., to Miss Ruth M. Levine of New York City, March 18.

ABRAHAM STRACHSTEIN to Miss Harriet Wolf, both of New York City, March 23.

MARK WHITE to Mrs. Pauline Porter Muirhead, both of Chicago, March 25.

Deaths

Joseph Gerrish Ayers, Rear Admiral, M. C., U. S. Navy, retired, East Orange, N. J.; University of Vermont College of Medicine, Burlington, 1864; entered the Navy in 1864 as an assistant surgeon and served during the Civil War; retired, Nov. 3, 1901; died, March 22, aged 82, following a long illness, at the home of his son, Montclair, N. J.

Arthur Joseph Campbell, Middletown, Conn.; College of Physicians and Surgeons, Baltimore, 1885; member of the Connecticut State Medical Society; member of the board of education; at one time served as president of the Middlesex County Medical Society; died, March 5, aged 65.

H. Tod Smiser, Cynthiana, Ky.; New York Homeopathic College and Hospital, New York City, 1901; member of the Kentucky State Medical Association; former president of the Harrison County Medical Society; died, March 4, aged 45, at Phoenix, Ariz., from tuberculosis.

Milo Forest Hart, Kirklin, Ind.; Indiana University School of Medicine, Bloomington and Indianapolis, 1909; member of the Indiana State Medical Association; died, March 15, aged 39, at the Methodist Hospital, Indianapolis, following an operation for abscess of the bowel.

Anna Craig, Kings Park, N. Y.; University of Michigan Medical School, Ann Arbor, 1893; member of the Medical Society of the State of New York; member of the American Medico-Psychological Association; died, March 21, aged 65, from heart disease.

Dougal McDougall King ● Denver; University of Toronto Faculty of Medicine, Toronto, Canada, 1902; member of the National Tuberculosis Association; author of "The Battle with Tuberculosis and How to Win It," in 1917; died, March 18, aged 43.

William W. Zimmerman, Richmond, Ind.; Pulte Medical College, Cincinnati, 1888; formerly mayor of Richmond and coroner of Wayne County; was found dead in his automobile, March 21, from cerebral hemorrhage, aged 66.

William Palmer Patterson ● Newark, N. J.; University and Bellevue Hospital Medical College, New York City, 1909; attending physician at the Newark City Hospital; died suddenly, March 21, from heart disease, aged 47.

Leonardo Igaravides-Landron ● Coamo, P. R.; University of Vermont College of Medicine, Burlington, 1891; Faculty of Medicine, Cadiz, Spain, 1895; died, February 21, aged 54, at San Juan, from parenchymatous nephritis.

George C. Reid, Kaslo, B. C., Canada; McGill University Faculty of Medicine, Montreal, 1908; was drowned in Kootenay Lake, February 10, aged 42, when the gasoline launch which he was operating sank.

Frank A. Story, Lafayette, Ga.; Medical Department University of Tennessee, 1880; member of the Medical Association of Georgia; died, January 15, at West Armuchee, aged 68, from chronic nephritis.

Hanna C. G. Kindbom ● Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1910; member of the Philadelphia Pediatric Society; died suddenly, March 19, from cerebral hemorrhage.

Thomas Meriwether Jones, Hernando, Miss.; Washington University School of Medicine, Baltimore, 1869; Confederate veteran; former health officer of De Soto County; died, March 15, aged 76.

Seymour L. Corpe, El Monte, Calif.; Hahnemann Medical College and Hospital, Chicago, 1894; was killed, March 13, when the automobile in which he was driving was struck by a train, aged 55.

Louis William Schultze, New York City; Medical Department of Columbia College, New York City, 1880; formerly coroner of New York County; died, March 24, aged 65, from heart disease.

Cyrus Milton Thurston, Cleveland; University of Michigan Homeopathic Medical School, Ann Arbor, 1892; founder of the Grace Hospital, Cleveland; died, March 12, aged 56, in Toledo, Ohio.

Frank Brady, Leesburg, Fla.; Kentucky School of Medicine, Louisville, 1903; served as first lieutenant, M. C., U. S. Army, during the World War; died, March 16, aged 41, from uremia.

● Indicates "Fellow" of the American Medical Association.

Louis Kelley Beatty, Washington, D. C.; Medical Department of Columbian University, Washington, 1881; member of the Medical Society of the District of Columbia; died, March 11, aged 65.

Emma Arabella Phillips, Greene, R. I.; Boston University School of Medicine, Boston, 1881; died, March 23, at the Homeopathic Hospital of Rhode Island, Providence, aged 78.

Victor Emil Max Koehler, Cincinnati; University of Leipzig, Germany, 1875; formerly instructor in the polyclinic, Ohio Medical College, Cincinnati; died, March 16, aged 69.

James Edward Burt, New York City; New York Homeopathic Medical College and Hospital, 1899; died, March 4, aged 65, from pernicious anemia, at the Flower Hospital.

Ernest William Downton ● Starrucca, Pa.; Medico-Chirurgical College of Philadelphia, 1902; served in the U. S. Army; died, March 12, aged 49, from scarlet fever.

George Start Pearce, Pawling, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1895; died, March 7, aged 50, following a long illness.

John V. Chambers, North Lima, Ohio; Medical Department of Western Reserve University, Cleveland, 1895; died, March 19, aged 57, from heart disease, in Florida.

Emanuel Carmelo Skembare ● Oak Park, Ill.; Chicago College of Medicine and Surgery, 1917; died, March 27, aged 27, following an operation for appendicitis.

John F. Butler, Wylie, Texas (years of practice, act of 1907); Confederate veteran; formerly postmaster of Wylie for ten years; died, March 11, aged 85.

Elmira Hertig, Blue Springs, Mo.; Northwestern University Woman's Medical School, Chicago, 1885; died, March 10, from cerebral hemorrhage, aged 70.

Charles Walter Conger, Indianapolis; Medical Department, University of Indianapolis, 1898; died, March 16, aged 49, at St. Vincent's Hospital, from uremia.

Robert C. Cottingham, San Francisco; University of Missouri School of Medicine, Columbia, 1883; died, March 11, aged 61, from cerebral hemorrhage.

Wilbur Grafton Hamlin, Arcadia, Ohio; Jenner Medical College, Chicago, 1906; formerly of Chicago; died, March 4, aged 51, following a long illness.

Francis F. Rowland, Pasadena, Calif.; Jefferson Medical College, Philadelphia, 1873; served twelve years as city health officer; died, March 12, aged 74.

Charles Ferguson, Los Angeles; Miami Medical College, Cincinnati, 1870; veteran of the Civil War; died, February 19, aged 79, from prostatitis.

Joseph George Mahoney, Shelton, Conn.; Yale University School of Medicine, New Haven, 1903; died, March 11, aged 42, from heart disease.

Kathrina Freudenberger ● Tamaqua, Pa.; Woman's Medical College of Pennsylvania, 1898; died, March 9, aged 62, from chronic nephritis.

Samuel R. Gregory, Mount Union, Pa.; College of Physicians and Surgeons, Baltimore, 1896; died, March 9, aged 51, from pneumonia.

Furman Epaphas Perry, Jefferson, Ohio; Western Reserve University School of Medicine, Cleveland, 1888; died, March 12, aged 66.

William Henry Davis, Millerton, N. Y.; University of Maryland School of Medicine, Baltimore, 1903; died, March 12, aged 42.

L. H. Hall, Pocahontas, Ark.; St. Louis College of Physicians and Surgeons, St. Louis, 1899; died, February 20, aged 55.

Roswell Elliot Tilson, Pittsburgh; Northwestern University Medical School, Chicago, 1908; died, March 11, aged 38.

Eugene H. Coons, Gloversville, N. Y.; Albany Medical College, Albany, N. Y., 1886; died, March 6, aged 62.

B. F. Brown, Jefferson City, Tenn. (licensed, Tennessee, 1903); veteran of the Civil War; died, March 12, aged 73.

Joseph Simpson Wise, Lincolnton, N. C.; Kentucky School of Medicine, Louisville, 1890; died, March 12, aged 53.

James Monroe May, Gulfport, Miss.; Meharry Medical College, Nashville, 1892; died recently, aged 53.

Eliza Markell Mitchell, Kansas City, Mo.; University of Michigan, Ann Arbor, 1877; died, January 31.

Amos P. Rockey ● Assumption, Ill. (licensed, Illinois, 1878); died, March 16, aged 70.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"PROPRIETARY PREPARATIONS IN POLAND"

The influence of the work of the American Medical Association—through its Council on Pharmacy and Chemistry and THE JOURNAL'S Propaganda for Reform in Proprietary Medicines—in protecting the public, both directly and indirectly, against the nostrum evil, extends year by year. Especially is it noticeable when new legislation is created. Recently the new Polish state introduced regulations governing the manufacture and sale of proprietary remedies. These regulations reflect the change in attitude that has taken place in the public mind in all civilized communities toward the responsibility of those who would make and sell preparations of the home remedy type. A recent issue of the English drug journal the *Chemist and Druggist* contained an excellent résumé of the new Polish regulations. We quote freely from this article:

"Proprietary medicines [in Poland[1]] must comply with the following requirements: (1) They must not be liable to decompose on prolonged storage; (2) Their composition may not resemble that of mixtures included in the national or any foreign pharmacopeia; (3) They must possess the therapeutic properties claimed for them by their producers. The manufacture and sale of a specialty in Poland requires a license, to be issued by the Minister of Health; in the case of specialties for veterinary use, consent of the Minister of Agriculture is also required. To obtain the necessary license, an application must be addressed in the first instance to the State Pharmaceutical Institute in Warsaw, which will transmit it to the Minister of Health for his final decision. The application must be accompanied by: (1) Two packages of the preparation in the form in which it is intended to place it on the market, or a sufficient quantity to enable a complete analysis to be made; (2) Designs of the labels and proofs of the enclosures, advertising matter, etc.; (3) In the case of compound preparations, a sufficient quantity of the single ingredients must be submitted to permit of their analysis, and also to enable the preparation of the product itself by the laboratory from the samples of its ingredients submitted for examination; (4) A complete description of the preparation, with disclosure of the formula and method of manufacture, as well as directions for use. The disclosure of the method of manufacture will be treated as confidential. Manufacturers of specialties are required to keep a special register, in which they will have to enter the amounts produced and the quantities of ingredients used in the process of manufacture; in addition every sale to wholesalers will have to be entered, with particulars of the quantity supplied, the address of the purchaser, and date of delivery. . . .

"Advertisements referring to specialties must be strictly truthful, and may not contain any statements likely to mislead the public. It is forbidden to make use of testimonials from patients or from 'owners of animals'. All advertising material, pamphlets, labels, etc., must be approved by the Minister of Health prior to their use or distribution. . . .

"The regulations also provide for a periodic control of all the specialties on the Polish market. To this end the State Pharmaceutical Institute is empowered to require, once every year, from any pharmacist or wholesale house, the delivery of the necessary packages of each specialty to carry out its analysis. . . .

"The Polish regulations have much in common with recent Austrian and Spanish legislation on proprietary medicines, and the influence of the English Proprietary Medicines Bill is appafent in the prohibition of the use of testimonials. While no quantitative disclosure on the label of the composition of the preparation is required, except in the case of potent drugs, the fullest details are demanded from the manufacturer, this information to be of such a nature as will enable the State Pharmaceutical Institute to prepare

1. The regulations apply to all of the new Polish state except that part which formerly belonged to Prussia, where the German regulations still operate.

itself the preparation for the purpose of verifying the manufacturer's statements. The obligation by the manufacturer to keep a record not only of his production, but of all his supplies to wholesalers, is also a new feature."

ALBERT ABRAMS

In this department of The Journal for March 25 appeared an article on Dr. Albert Abrams and some of his discoveries. We have now received a letter from a physician, who asks that his name be not published, reading:

"*To the Editor:*—I notice in your article on Albert Abrams the statement that he was born in 1864 and received his degree of M.D. in Heidelberg 1882; if these data are furnished by himself and not a typographical error—though I find the same data in the American Medical Directory for 1916—then it is high time that some board of censors should make a careful examination of his credentials.

"Anybody, like myself, who is acquainted with medical matters in Germany knows that it is preposterous to assume that anybody could obtain the degree of M.D. in any German university at the age of 18 years. "M. D., Leipzig."

Eighteen *is* rather young to receive an M.D. degree from Heidelberg! By again going over the various sources of information available the following data were collected: In Polk's Medical Directory for 1886 Dr. Abrams' name appears as a graduate of the University of Heidelberg, 1882, and of Cooper Medical College in 1883. The records we have from these two institutions confirm these dates. The year of Dr. Abrams' birth seems less clear. In the early part of 1902 the American Medical Association sent Dr. Abrams a blank for him to fill out for a permanent record. This was returned in due course and, according to it, Dr. Abrams was born in San Francisco Dec. 8, 1863. This same date appears in various editions of "Who's Who in America." A blank sent by the A. M. A. Directory Department to Dr. Abrams in 1908 asking for a personal biographical report was returned Aug. 20, 1908; it gave Dr. Abrams' date of birth as Dec. 8, 1864. A similar blank sent in the earlier part of 1909 was returned giving the same birth date. We learn, however, that an affidavit executed in 1917 states that Albert Abrams was born in San Francisco Dec. 8, 1862.

Just how long Dr. Abrams attended Heidelberg University before he was granted the M.D. degree, we do not know. Apparently, at that time the standards for admission to that institution were not especially severe and the length of time one would have to attend before being admitted to an examination seems to have depended on the educational credentials that the matriculant offered. What credentials Dr. Abrams submitted, we do not know. Assuming that the earliest date (1862) represents Dr. Abrams' date of birth, he could have been but twenty years old when he received his M.D. from Heidelberg. This indicates a precocity that might have forecast Dr. Abrams' later achievements.

Throughout the records of Dr. Abrams' educational credentials there appears the statement that he also graduated from the "University of Portland" in 1892, receiving the degree of A.M. From references available we have been unable to find any record of a "University of Portland."

QUEEN OF ANTISEPTICS

This preparation is marketed by a person in Aurora, Ill., calling herself "Mme. Leonard." The following claims appear on the label:

"A Perfect Vaginal Germ Destroying Powder and Applicator.
"Antiseptic, Anodyne Adhesive, Astringent.
"Action instantaneous and lasting, non-irritating, scientifically prepared. Use as directed."

The preparation comes in a package containing approximately 79 grams (about 2¾ ounces) and is in the form of a white, odorless powder. It was recently examined in the A. M. A. Chemical Laboratory, which reported:

"The material was not completely soluble in water or in alcohol. The portion of the substance soluble in alcohol responded to tests for boric acid. This portion contained neither mercuric chlorid, salicylic acid, benzoic acid nor chinosol, substances frequently used as antiseptics. Such astringents as ferric chlorid and tannic acid were absent. The part insoluble in alcohol gave tests for a mercury compound, a chlorid and ammonia. This indicated the presence of ammoniated mercury. Quantitative analysis showed that the preparation is composed essentially as follows:

"Boric acid ..... 97 per cent.
"Ammoniated mercury ..... 3 per cent."

The 2¾ ounce package of Mme. Leonard's "Queen of Antiseptics" sells for $2.00; the approximate cost of materials (1922 prices) is 2½ cents.

Correspondence

PROPOSED ANNUAL SUMMARY OF DIPHTHERIA MORTALITY

To the Editor:—The annual publication as to the prevalence of typhoid fever throughout the United States has been of much service as a source of information and a stimulus to our work. It has been suggested to me that a similar report in our fight against diphtheria might be of like value. I can see difficulties that are presented by the different character of disease found in diphtheria from that of typhoid fever, but it seems to me that well edited and authenticated reports published once or twice a year, giving not only the number of cases reported and the number of deaths, but also the actual procedures used by the health departments in controlling the disease, might be of value to the workers.

C. Hampson Jones, M.D., Baltimore.
Commissioner of Health.

[Note.—The suggested survey has been under consideration for some time and will probably be undertaken. The matter, however, is not as simple as in the case of typhoid, in which, moreover, the obtaining of essential facts at the outset was not at all easy.—Ed.]

"IS THE CONTROL OF DIPHTHERIA LEADING TO ERADICATION?"

To the Editor:—In his consideration of the question "Is the Control of Diphtheria Leading to Eradication?" (The Journal, March 4, p. 630), Dr. Cumming, under the section headed "The Four Applied Factors," brings out that the "(1) clinical and laboratory diagnosis of the disease and the isolation of the patient; (2) laboratory identification of the healthy carrier and his isolation" are strictly regarded during epidemics but are probably not so strictly adhered to during interepidemic periods. This, no doubt, is true in many parts of the country, not only in rural districts but also in urban communities. Not sufficient attention is paid by health officers to be constantly on the alert and to be constantly driving at this disease by taking large numbers of cultures, during interepidemic periods, of healthy persons who have been in any way connected with clinical cases. Then, when carriers are determined by this culturing, they in turn should have cultures taken, and cultures should be taken of every person coming in contact with these carriers, within a reasonable number of days of the detection of the carriers, and so on, thus leading to an investigation of an endless chain of people. In one of our largest cities, I was told a few years ago, the children of the family of a clinical case of diphtheria were allowed to return to school without a culture ever being taken, either at the beginning or at the termination of quarantine. Of course, this city sent many children to school who were diphtheria carriers.

Much criticism is brought to bear on communicable disease directors by the public and by members of the medical profesSon who claim that health departments are unjustly quarantining carriers because of the fact that the carriers may

have avirulent organisms. It should be the duty of a health officer to quarantine all carriers of bacilli, morphologically diphtheria, until they have been proved avirulent. For a period of three or four years in the Baltimore City Health Department, in a series of cultures taken from persons who came directly or indirectly in contact with clinical cases of diphtheria, 97 per cent. were virulent (Hachtel and Bailey: *Am. J. Pub. Health* **10**:42 [Jan.] 1920); therefore it seems that our fight against diphtheria by our method of quarantining carriers the same as we do clinical cases is justified.

Studies based on the classification of deaths as to the type of diphtheria extending over a period of two years have proved that, in Baltimore, 82.11 per cent. were due to the laryngeal type of the disease (Hogan, J. F.: THE JOURNAL, Aug. 27, 1921, p. 662). It seems to appear from these studies, assuming that other cities have the same type of diphtheria as Baltimore—and we have no reason to believe that they have not—that in more than four fifths of the 15,000 fatal cases, or 12,000, the patients are dying of the laryngeal type of the disease. We must take into consideration one or two factors for this high toll of human lives in laryngeal diphtheria: It is neglect either on the part of the people or on the part of the medical profession. Once laryngeal diphtheria develops and progresses to such an extent that there is dyspnea and a beginning cyanosis, antitoxin will not save life. Intubation must then be resorted to. Frequently when physicians are called to see a child with laryngeal diphtheria, the child is suffering with retractions of the interspaces, and the physician will give a large dose of antitoxin thinking that this will act in from six to eight hours as the textbooks state (and which is most erroneous), and that therefore it will not be necessary to intubate. This false belief by physicians, based on false statements in textbooks, is largely responsible for this ignorance; that is, responsible for it plus the lack of training of medical men in infectious diseases, which lack of training is the fault of medical educators. Propaganda should be started by the American Medical Association to teach physicians the proper time to intubate, and not to wait until cyanosis appears and not to depend on antitoxin. I am not trying to discourage large doses of antitoxin, as such should be given and be given as early as possible; but too great confidence is placed in this remedy in laryngeal diphtheria.

If 15,000 deaths occur annually in the United States from diphtheria, it is to be recommended that health officers classify their death certificates to ascertain exactly what percentage is due to the laryngeal type; and, if the country as a whole has the same percentage of laryngeal deaths as Baltimore has had for the last three years, it appears that about 12,000 of the deaths occurring in the United States annually are due to the laryngeal type of the disease. On investigation, we find that, in Baltimore, 83.12 per cent. of the laryngeal deaths are of patients under 6 years of age; therefore most of the laryngeal deaths occur in the preschool age, and performing Schick tests and immunizing schoolchildren with toxin-antitoxin is of little value in the control of diphtheria leading to eradication; nor is it lowering the death rate. If 12,000 deaths occur annually in the United States from laryngeal diphtheria, we must teach our physicians to intubate earlier, as well as to give antitoxin and not to depend on antitoxin alone.

JOHN F. HOGAN, M.D., Baltimore.
Director, Bureau of Communicable Diseases, City of Baltimore Health Department.

To the Editor:—May I call attention to a conclusion reached by Dr. James Gordon Cumming in his article, "Is the Control of Diphtheria Leading to Eradication" (THE JOURNAL, March 4). It reads: "Eradication of diphtheria will not come through the serum treatment of patients, by the immunization of the well, or through the accurate clinical and laboratory diagnosis of the case and the carrier followed by quarantine; rather it will be attained through the mass sanitary protection of the populace, subconsciously practiced by the people at all times."

Medical men of eminence in the profession criticizing the work of sanitarians (and this includes physicians) should do so in a helpful and constructive manner.

The medical profession and modern public health officials have labored too hard to have their efforts thoughtlessly criticized from authoritative sources. From our own experience in this city alone we have learned that if diphtheria is treated adequately and efficiently, diphtheria antitoxin is a true specific. The other sanitary aids in this endeavor are correlating the effectiveness of diphtheria antitoxin in the prevention of this disease particularly among those most susceptible. We also know that immunization through either immediate use of diphtheria or the protracted toxin-antitoxin method confirmed by the Schick test for those susceptible has worked well. We know that immunization in a large percentage works well, that today, through publicity, more physicians are on the lookout and are more careful in their physical examinations to determine the presence or the cause of sore throats or false membranes, and in many instances they are using laboratory aids (more than ever), as is shown by trial cultures submitted. To nullify all these efforts and to place eradication of diphtheria simply on mass protection of the populace seems to me a conclusion as far fetched as it is untrue.

Diphtheria is one of the awful diseases of early childhood. In this city it claims annually from 2,190 to as low as 1,045. The death rate of diphtheria per thousand population in 1901 was 0.58, whereas in 1920 it was reduced to 0.18. We feel that the progress that has been made in New York in the control of this disease has been splendid.

Before the days of diphtheria antitoxin, nearly every throat specialist had one or two sets of tracheotomy or intubation instruments, whereas today these are practically obsolete. In my first five years of practice I did from one to three intubations a week. Since 1895 I have not done a single one of these operations.

S. DANA HUBBARD, M.D., New York.
Director, Bureau of Public Health Education.

A NEW (OLD) SIGN IN INTUSSUSCEPTION

To the Editor:—On the tactile identification of a palpable tumor by abdominal and bimanual methods of examination, conducted under general anesthesia, in an infant suffering from intussusception depends the situation of the lesion and the duration of the disease. For practical purposes of diagnosis, a negative result of such an examination can be disregarded in the presence of the symptoms characteristic of this type of intestinal obstruction. Thus, sudden abdominal pain accompanied by shock, with recurring colic attended by pallor and high pitched crying, followed by frequent stool motions of small fecal material and blood-streaked mucus, is sufficient evidence to justify immediate laparotomy.

Unfortunately, however, not all patients conform to the expected symptoms, and it has been my experience that in the majority of cases vomiting is an early symptom, and there is a history of total constipation with occasional periods of straining until a few hours later, when a large amount of blood clot is passed by rectum. There are other difficulties encountered in the diagnosis of intussusception. Overdistention of any hollow muscular viscus will cause colicky pains. Acute enteritis may be confused. In the routine rectal examination, a tendency to sigmoidal prolapses may

be mistaken for intussusception. A consideration of the gross pathology of intussusception discloses a triangle of mesentery interposed between the invaginated intestine exerting traction on one side of the bowel so that the prolapsed end at the neck of the intussusception is turned toward its mesenteric attachment. In consequence of this drag of the mesentery, the aperture of the bowel at the distal extremity of the intussusception is drawn to one side, and the cylindric tumor assumes a concentric outline.

In the American edition published sixty-six years ago, Carl Rokitansky, remarking on this mechanical distortion, observes:

"First, the invaginated portion does not lie parallel with its sheath, but always offers a greater curvature than the latter, the inverted tube being compressed on its concavity into transverse folds. Secondly, the orifice of the invaginated portion of the bowel does not lie in the axis, or in the center of the sheath, but toward the side; and following the traction exerted on it by the mesenteric fold that belongs to the inverted intestines, it is directed toward the mesenteric wall of the sheath; the opening is not circular, but represents a fissure. This affords a diagnostic sign for the examination of intussusceptions of the rectum which are within the reach of manual exploration." (Path. Anat., Vol. 2, p. 52).

Maxwell Quackenbos, M.D., New York.

"A NEW HYSTERECTOMY KNIFE"

To the Editor:—In The Journal, March 25, Dr. W. H. Taulbee of Maysville, Ky., referring to the "new hysterectomy knife" presented by me in the issue of February 25, says that he has been using this knife for many years and that it was devised by Dr. Howard Kelly and listed by the Kny-Scheerer Company. I immediately submitted his criticism to Harvey Pierce & Co., the Philadelphia branch of the Kny-Scheerer Company, who replied:

I have your note relative to The Journal correspondence on the new hysterectomy knife, in which Dr. Taulbee asserts this knife is similar to the hysterectomy knife made by Dr. Howard Kelly many years ago. I am enclosing you a cut of the Kelly spud, as we used to call it, which is an entirely different instrument, as you will see, from your knife. I am also sending you a Kelly hysterectomy spud, the knife which Dr. Taulbee referred to. You can see very clearly that this is not in any way like your knife. It is entirely different.

This correspondence with the Kny-Scheerer Company ought to prove conclusive with regard to Dr. Taulbee's criticism.

William Edgar Darnall, M.D., Atlantic City, N. J.

"ADMINISTRATION OF ETHER BY THE USE OF A SIMPLE MECHANICAL ETHER DROPPER"

To the Editor:—A number of years ago I devised an apparatus similar to the one described by Odén and Foshee (The Journal, March 18, p. 803). No doubt, essentially the same apparatus has been employed by other physicians wearied of the clumsy and laborious manual method of holding the anesthetic container. The apparatus with a clamp holder on the operating table has disadvantages frequently, getting in the way or being disarranged by the patient during the excitement stage, when patient is large and has to be turned or removed from the table, or when the operative field is toward the cephalic end of the table. A simpler method is to have the gooseneck holder attached to a light, portable tripod stand, such as is used for the smaller size electrotherapeutic lamps; even a tripod music stand may be improvised to support the gooseneck attachment in place of clamping it to the table. Still another improvement is to have a three cell holder rotating on a pivot at the end of a gooseneck so that ether, chloroform or a volatile oil may be administered in turn, as desired. As is well known, prior administration of a volatile oil such as suggested, oil of lavender, etc., serves kindly with children and nervous adults undergoing anesthesia.

No claim for originality is, of course, here made; but it is hoped that the suggestions may draw attention to the essentials of the device, and thereby lead other physicians to get away from the intolerable drudgery attendant on the old-style manual method of holding the anesthetic container.

J. B. H. Waring, M.D., Blanchester, Ohio.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

"YEAST FOAM" AND "HORMOTONE"

To the Editor:—1. A few days ago I received a sample bottle of "Yeast Foam Tablets" from the Northwestern Yeast Company of Chicago. The usual line of bunk advocating its usefulness, of course, accompanied the tablets. Kindly let me hear just what's what about those tablets.

2. Also tell me what you know about "Hormotone," a tablet prepared by the G. W. Carnrick Company of New York City.

H. B. Moz, M.D., Blanchardville, Wis.

Answer.—1. Shorn of verbiage, "Yeast Foam Tablets" are claimed to be dried yeast in the form of tablets. They are put up in typical "patent medicine" style, and are "recommended" by the yeast factory which markets them "as an aid in the treatment of loss of appetite, run down condition, anemia, convalescence from sickness, boils, pimples and certain other skin troubles." While it has been shown that persons living on an ordinary diet containing a reasonable proportion of fresh vegetables are certain of obtaining a plentiful supply of vitamins ("Our Knowledge of Vitamins," The Journal, March 11, 1922, p. 734), the Yeast Foam Tablets advertising would lead the public to believe that it is in imminent danger of suffering from an inadequate supply of vitamin B. In the advertising it is averred that the yeast tablets were made available because of an "insistent and prolonged demand for a pure therapeutic [sic] yeast" ("The Demand for Vitamins," The Journal, March 18, 1922, p. 810), and, with a show of concern for the public welfare, the purchaser of Yeast Foam Tablets is asked to send his name and address so that the yeast concern "will be enabled to keep in touch with the progress you are making and give you much valuable information in respect to Yeast Foam Tablets as a medicinal agent." Though the Yeast Foam propaganda is plainly addressed to the public, specimen packages are being sent to physicians, and thus the profession is given once more the opportunity to act as an unpaid pedler.

2. Hormotone, "a pluriglandular tonic for asthenic conditions," is sold by the G. W. Carnrick Company in the form of tablets for oral administration. Each tablet is said to contain 1/10 grain of desiccated thyroid and 1/50 grain of entire pituitary, together with the hormones of the ovary and testes —the amount and the form in which the latter are supposed to be present are not given. The Council on Pharmacy and Chemistry refused to accept Hormotone for New and Nonofficial Remedies.

LACK OF TOXICITY OF SMALL DOSES OF COPPER CHLORID

To the Editor:—We are using a "pure" copper hot water tank. The city water running into it is chlorinated. Water delivered at the faucet has turned the bathtub green. The water assays 1/50 grain of copper chlorid per gallon. Would drinking two glasses of this hot water daily before breakfast in any way endanger the health? In other words, could you tell me the toxicity of copper chlorid, if continued over a long period?

E. F. Smith, M.D., Swissvale, Pa.

Answer.—The toxicity of copper salts is relatively low and the absorption is very limited (Sollmann: Manual of Pharmacology, 1917, p. 783). It has been reported that even on continued use quantities of copper sulphate up to 0.5 gm. a day have been shown to be devoid of untoward effects; these quantities were not continued indefinitely. As the amount of copper chlorid which you report (1/50 grain in 1 gallon) is less than 1 part in 2,000,000, it is improbable that harm will result from drinking two glasses of the water each day.

Medical Economics

PHYSICIANS' INVESTMENTS

A subscribing physician has just sent us a letter received from a New York Company which carries the legend "Investment Bankers" beneath its name on its letter-heads. As this letter is typical of other letters sent out by similar companies, we are publishing herewith an exact copy, following which we are analyzing the various statements made, which show to any one initiated in the legitimate investment or brokerage business that any company sending out such a letter is probably unsound.

Here is the letter:

Dear Dr. ——:

Very glad you have given us an opportunity to send you the Record Book, which we are enclosing complimentary and also our interesting booklet, "How You Can Become Financially Independent." The following are a few of the unusual advantages of the BLANK 20 PAYMENT PLAN:

No Margin Calls.

Only 6 per cent. interest is charged on unpaid monthly balance.

We originated the two above protective features.

We are dealers, not brokers and for your protection as well as our own we specialize in good, dividend-paying securities listed on the New York Stock Exchange.

You may take profits at any time — this closes your account and remittance will be promptly mailed.

You may close your account at any time upon notice to us and we will promptly remit balance due you. You will thus always be in a position to take advantage of the changing condition of the market.

You are credited with an amount equal to all dividends paid.

CONFIDENCE

We fully appreciate the fact that CONFIDENCE is the very foundation of an Investment business, and are pleased to refer you to our banks.

Harriman National Bank, 527 Fifth Avenue, New York City.

U. S. Mortgage & Trust Company, 55 Cedar Street, New York City.

There never was nor never will be a better time than RIGHT NOW to invest in GOOD stocks with large dividend yields—stocks of proven worth and that have excellent possibilities for substantial profits.

Use the handy order blank in back of booklet—or better—wire in your order TODAY at our expense "at the market" using the enclosed telegraph blank—your remittance can follow by mail.

TODAY—NOW is better than tomorrow.

Yours faithfully,

—— & COMPANY,

By ——

A personal suggestion is enclosed for your consideration.

The foregoing letter purports to come from a firm which can assist its customers to become financially independent, following which certain "unusual advantages" enjoyed through dealing with this company are disclosed. Let us take up these "advantages."

No Margin Calls. This means that the company does not intend to call upon its customers for additional margin or security. When any legitimate broker purchases any amount of stock for a customer, the customer is naturally required to put up some sort of a deposit. This deposit may be in the form of cash or of marketable securities. In other words, when you go to a broker and place an order for 100 shares of Blank Stock at $100 a share, costing $10,000, the broker in effect will make you a loan on this stock which you are buying. As he cannot tie up his own limited capital in this way, he reserves the right to rehypothecate the security at his bank. His bank, being a careful institution, will lend him only a conservative amount—say 75 per cent. of the market value of this security—in other words, $7,500. Therefore, when the broker requires you to put up a "margin" of $2,500, he is in reality lending you $7,500 on the stock which you are buying, and this $7,500, together with the $2,500 cash which you put up, pays for the stock which is being bought. In case the stock should decline, the broker's bank will call on him for additional security, so that it will at all times be protected through lending only 75 per cent. of the value of such security. It is, therefore, natural to assume that the broker in turn must call on you in the same manner. In case you are unable to put up additional cash or security in order to give the desired protection to the broker, which he in turn can pass along to his bank, he is quite justified in "selling you out." This is sound practice, and must be followed by all sound brokers. One reason why many houses have recently failed in New York is that they were so anxious to obtain business that they were willing to operate with customers on smaller margins than sound houses demanded, with the result that a declining stock market exhausted all the assets of such companies. Therefore, it is well to beware of any house which advertises "No Margin Calls."

Only 6 per cent. interest is charged on unpaid monthly balance. Here again is an advertised "advantage" which might be quite likely to work to the considerable disadvantage of the broker. When, in effect, the broker makes you a loan on stock which you are buying as described above, he must naturally charge you interest, for the reason that he in turn must pay interest to his bank from which he obtains the money to carry on his business. Interest rates fluctuate. Most brokers' loans with their banks are "demand" or "call" loans. In times past, "call" money in New York has fluctuated from as low as 3 per cent. to as high as 30 per cent. It is not likely that any broker could afford to charge his customers 6 per cent. when his bank might be charging him anywhere from 6 to 30 per cent.

We originated the two above protective features. This is not a true statement, and, if it were, it can be seen from the foregoing analysis that it is not a protective feature from the broker's point of view, and therefore it is not a protective feature for the broker's customers.

We are dealers, not brokers and for your protection as well as our own, we specialize in good, dividend-paying securities listed on the New York Stock Exchange. It is possible that this company may have specialized only in securities listed on the New York Stock Exchange. However, the place to go to buy securities listed on the New York Stock Exchange is to some member of the exchange. It would be necessary for this nonmember to pay a commission on all stocks bought on the exchange, and, as he is not in business for his health, he would charge you a commission on top of the one he paid. It can, therefore, be seen that money could be saved by buying the same stock from a member.

You may take profits at any time—this closes your account and remittance will be promptly mailed. Suppose there are no profits. It is more likely that there would be losses than profits.

The next thing of interest in the letter is "Confidence: We fully appreciate the fact that confidence is the very foundation of an investment business, and are pleased to refer you to our banks. Harriman National Bank, 527 Fifth Avenue, New York City. U. S. Mortgage & Trust Company, 55 Cedar Street, New York City."

It is doubtful whether many people would take the trouble to write to the banking companies given as references in the letter. In case they did they would probably not learn much, because it is not common practice for banks to issue unfavorable opinions relative to their own depositors and customers.

Instead of the rest of the letter reading as it does, it should, if inspired by a real interest in your welfare, be worded somewhat in the following fashion:

There never was nor never will be a worse time than right now to invest in "good" stocks with large dividend yields—stocks which seem today of proved worth have excellent possibilities for substantial losses, for many good stocks have stopped paying dividends and have declined to a large degree in the market.

Use the handy order blank in back of booklet—but send it to us by mail—do not wire your order at our expense "at the market" because, our commission being only a legitimate one, we would probably not have enough profit left after paying for your wire.

Today—now is better than tomorrow—to make a decision not to deal with any house which follows the unsound practices with which we are willing to accommodate you.

It is undoubtedly good for the unsophisticated investing public that many houses which have been run as this letter boasts this house is run have failed, although the failures have cost many such investors large amounts of money, generally representing hard earned savings. A preponderance of the names of the "sucker" lists of many such houses are those of physicians and other professional men and women.

It does not seem reasonable that if any concern is able to tell you, as advertised in the letter, "How you can become financially independent," it will take the trouble to write a letter soliciting any small amount of money which some physician in Nebraska might send them. The truth of the matter is that no one knows how to take any given amount of money, and make more than a good interest return on it, without taking some chance of loss. Certainly, no one should ever send money to any institution unless he knows that it is a safe and sound banking house of long established reputation. There are plenty of quacks in other lines of business than that of the medical profession. Why deal with a quack when reliable financial doctors are to be had? There are many reliable banking institutions. It is their business to conserve your money and not to multiply it.

Finally, about two weeks after the company sent out the letter quoted, it went into bankruptcy and is now being investigated for illegitimate practices.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville. Sec., Eclec. Bd., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith. Sec., Homeo. Bd., Dr. Geo. W. Love, Rogers.

CALIFORNIA: Los Angeles, April 11. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

DISTRICT OF COLUMBIA: Washington, April 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

HAWAII: Honolulu, April 10. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

MASSACHUSETTS: Boston, May 9-11. Sec., Dr. Samuel H. Calderwood, 144 State House, Boston.

NEVADA: Carson City, May 1. Sec., Dr. Simeon L. Lee, Carson City.

NEW MEXICO: Santa Fe, April 10-11. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 22-25. Asst., Professional Examination, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, April 11-12. Sec., Dr. J. M. Byrum, Shawnee.

Tennessee June Examination

Dr. Alfred B. DeLoach, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Knoxville, Memphis and Nashville, June 10-11, 1921. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. One hundred and two candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Illinois Medical College		(1904)*	79.1
Loyola University		(1917)	87.5
Tulane University		(1918) 85.4, (1920) 85.3, (1921)	89.1, 90.9
Johns Hopkins University		(1920)	89.3
Washington University		(1920)	84
Columbia University		(1920) 90.3, (1921)	91.8
Jefferson Medical College		(1921) 83,	90.8, 92.8
University of Pennsylvania		(1921)	88.9
Chattanooga Medical College		(1893)	76
Meharry Medical College		(1920) 79.8, (1921)	77.6, 78.1, 78.4, 80.9, 81.3, 82, 83.1, 84.6, 84.6, 84.8, 84.9, 85.1, 85.1, 85.6, 85.6, 85.9, 86.1, 86.3, 86.4, 86.9, 87.5, 88.5, 89.4, 89.4, 89.5, 90, 90.1, 91.8.
University of Tennessee		(1921)	81.6, 84.4, 84.6, 86.4, 86.4, 87.3, 87.4, 87.4, 88, 88.1, 88.5, 88.8, 89, 89.3, 90, 90.1, 90.3, 90.5
Vanderbilt University		(1921) 79,*	85.4, 85.6, 85.9, 86.4, 87, 87.4, 87.8, 87.8, 87.8, 87.8, 87.9, 88.3, 88.4, 88.5, 88.8, 89.4, 90, 90.1, 90.4, 90.4, 90.5, 90.5, 90.9, 90.9, 91, 91.3, 91.3, 92, 92.3, 92.4, 92.4, 92.4, 93, 93.3, 94.5, 95.3, 95.4
Medical College of Virginia		(1904)	76
University of Virginia		(1920)	90

* Graduation not verified.

New Jersey October Examination

Dr. Alexander MacAlister, secretary, New Jersey State Board of Medical Examiners, reports the written examination, held at Trenton, Oct. 18-19, 1921. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 8 candidates examined, 6 passed and 2 failed. Seventy-three candidates were licensed by reciprocity. One candidate was licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1921)	86.7
Columbia University		(1920)	86.4
Jefferson Medical College		(1920)	82.2
University of Pennsylvania		(1920) 83.5,	83.5
Vanderbilt University		(1916)	78.7
	FAILED		
University of Naples		(1911)*	73.1
University of Berne		(1916)*	72.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College		(1913)	Alabama
Howard University		(1916) Tennessee, (1920)	Dist. Colum.
Emory University		(1919)	Georgia
National Medical University		(1903)	Illinois
Bowdoin Medical School		(1920)	Maine
College of Physicians and Surgeons, Baltimore		(1892)	N. Carolina
	(1910) New York, (1912) Delaware		
Johns Hopkins University		(1918)	Maryland
University of Maryland		(1920)	Maryland
Harvard University		(1908) Washington, (1920)	New York
Central Medical College of St. Joseph		(1899)*	Mississippi
Missouri Medical College		(1885)	Tennessee
National University of Arts and Sciences		(1914)	Missouri
Columbia University		(1898), (1906), (1915), (1917), (1919), (1920)	New York
Cornell University		(1914), (1918), (1920)	New York
Eclectic Medical College of the City of New York		(1899)	New York
Fordham University		(1919), (1920, 3)	New York
Long Island College Hosp.		(1898), (1917), (1919), (1920, 3)	New York
New York Homeopathic Medical College and Flower Hospital		(1916), (1917), (1920)	New York
University and Bellevue Hosp. Med. Coll.		(1919), (1920, 10)	New York
University of Buffalo		(1904), (1914)	New York
Leonard Medical School		(1904)	W. Virginia
Western Reserve University		(1913)	Ohio
Hahnemann Medical College and Hospital of Philadelphia		(1898) Ohio, (1901) Pennsylvania, (1920)	Delaware
Jefferson Medical College		(1909)	Penna.
Medico-Chirurgical College of Philadelphia		(1895)	Penna.
Temple University		(1916), (1919)	Penna.
University of Pennsylvania		(1900), (1920)	Penna.
	(1920, 2)† New York		
University of Pittsburgh		(1917)	Penna.
Woman's Medical College of Pennsylvania		(1915)	Penna.
Medical College of the State of South Carolina		(1914)	N. Carolina
Vanderbilt University		(1919)	Tennessee
University of Vermont		(1920)	Vermont
Wisconsin College of Physicians and Surgeons		(1902)	Wisconsin
McGill University		(1919)	Maine
University of Toronto		(1918)	New York

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Pennsylvania		(1919)	N. B. M. Ex.

* Graduation not verified.

† The license of one of these candidates is not verified.

Oklahoma October Examination

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, Oct. 11-12, 1921. The examination covered 11 subjects and included 110 questions. An average of 75 per cent. was required to pass. Of the eight candidates examined, 7 passed and 1 failed. Two candidates received reregistration licenses. Eleven candidates were licensed by reciprocity, and one candidate was licensed on endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1921)	81
Rush Medical College		(1921)	93
St. Louis College of Physicians and Surgeons		(1921)	83, 86
University of Oklahoma		(1921)	98
Jefferson Medical College		(1920)	96
Memphis Hospital Medical College		(1911)	77
	FAILED		
University of West Tennessee		(1921)	66

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Little Rock		(1911)	Arkansas
State University of Iowa Coll. of Homeopathic Med.		(1910)	Iowa
University of Kansas School of Medicine		(1914)	Kansas
University of Michigan Homeopathic Medical School		(1897)	Michigan
Barnes Medical College		(1899)	Missouri
Kansas City Hahnemann Medical College		(1908)	Kansas
Kansas City Homeopathic Medical College		(1901)	Missouri
University of Pennsylvania		(1914)	S. Carolina
Memphis Hospital Medical College		(1899)	Tennessee
Vanderbilt University		(1892)	Kentucky
University of Texas		(1919)	Texas

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Maryland		(1914)	N. B. M. Ex.

Book Notices

HEART DISEASE AND PREGNANCY. By Sir James Mackenzie, M.D., F.R.C.P., LL.D., Director of the Institute for Clinical Research, St. Andrews. Cloth. Price, $3.50. Pp. 138. New York: Oxford University Press, 1921.

There is a great deal of useful information packed away in these few pages. Mackenzie is addressing especially the general practitioner who cares for obstetric cases, and he is simple and direct in his explanations, descriptions and conclusions. He reiterates what he has many times said in other places as to the relative insignificance of the murmur in estimating the degree of the heart's efficiency. The importance of the condition of the muscle is properly stressed. The prognostic value of the arrhythmias is briefly considered. Summed up, Mackenzie's advice is to decide as to the danger of pregnancy in case of heart disease on no one sign or symptom and by no arbitrary rule. Rather study each case individually and determine not what anatomic lesion exists so much as whether there is reserve power in the muscle sufficient to enable it to meet strain without evidence of threatening failure, as shown by dyspnea, râles, etc. In this book, as in many of his other writings, the author takes the position—only partly justified by fact—that nearly every one else overestimates the value of the murmur, ignores the condition of the heart muscle, and is indifferent to the nature or significance of the irregularities. It is interesting to note quite a change in his attitude toward the "back pressure" theory. He now admits that in many cases, especially of mitral stenosis, back pressure is a feature that cannot be neglected. Little or nothing is said of pregnancy with the heart of high blood pressure. This might properly and profitably have been considered.

APPLIED PSYCHOLOGY FOR NURSES. By Mary F. Porter, A.B., Teacher of Applied Psychology, Highland Hospital, Asheville, N. C. Cloth. Price, $1.50. Pp. 172. Philadelphia: W. B. Saunders Company, 1921.

This is a useful little book. Psychology is made as simple as possible, with no discussions of moot points, and with many examples drawn directly from the contact between patient and attendant. The statements relating to the attitude of nurse to patient are equally true for the medical man, especially the general practitioner. It is interesting to read that "there can be no neurosis without a psychosis." The remarks on the power of suggestion are well put. The chapter headings are: What is Psychology? Consciousness; Organs of Consciousness; Relation of Mind and Body; The Normal Mind; Psychology and Health; Variations from Normal Mental Processes; Attention the Root of Disease or Health Attitude; Getting the Patient's Point of View; The Psychology of the Nurse, and The Nurse of the Future.

SYNOPSIS OF MIDWIFERY. By Aleck W. Bourne, B.A., M.B., B.Ch., Obstetric Surgeon to In-Patients, Queen Charlotte's Hospital. Second edition. Cloth. Price, $3.50. Pp. 211. New York: William Wood & Co., 1921.

This little book includes in epitome the matter commonly found in a textbook on the subject—in fact, it is what, in America, would be called a quiz compend with the queries omitted. A book of this nature ordinarily has a limited field of usefulness: as the author's preface gives it, it is for the students' review before an examination. However, we believe that this volume has an additional value to those residing on this side of the Atlantic in that its perusal will give one a good outline of English thought and practice on obstetrics. The volume, in essence, is a recapitulation of the views expressed in their books by Eden, Galaban, Blacker and Monroe Kerr. The English trend of obstetric teaching varies from that accepted in America in many particulars, and this is manifest in many pages. We cannot subscribe, for example, to the empiric administration of streptococcic serum for puerperal infections: American authorities have amply convinced themselves of the futility of its use, even in those instances of culturally proved infections in which the bacteria were found in pure culture, or predominated in mixed infections. Nor will American physicians approve of the recommendation, even with restrictions, of the use of the curet and douche in sapremic infections. On the other hand, the outline of treatment of placenta praevia is invaluable, as it clearly and diagrammatically presents the essentials of interference in the different degrees, and the conditions that must obtain for each method. Rectal examinations have become so common in America, and spell such security to the patient, that we wonder why this book does not mention their value as a substitute for vaginal touch in the conduct of normal labor, and in pathologic labors in which pelvic examinations necessarily must be repeated frequently. Our laws and customs are so insistent that Credé's prophylactic instillation in the eyes of the new-born should be a routine, that we question the suggestion that it be reserved for suspected cases. It would be possible to outline many other differences of thought and habit of our English cousins. The book in no way may be classed as one which should be in the hands of every practitioner or student; as a review of the teachings of another people it is of great interest, and illustrates the fact that medical practice is not truly international in fact and in theory.

LESSONS ON TUBERCULOSIS AND CONSUMPTION FOR THE HOUSEHOLD. Showing How to Prevent Tuberculosis, How to Recognize Its First Symptoms, How to Win Back Health. By Charles E. Atkinson, M.D., Cloth. Price, $2.50. Pp. 470, with 21 illustrations. New York: Funk & Wagnalls Company, 1922.

Chatty, concise and clear, this book is well calculated to meet the needs of the general public. The writer has touched all points of interest to the consumptive, his family, and even his physician. The subjects of causation, contagion and prevention are well treated. Rest and exercise, climate and nursing are intelligently given. Some time is given to "planning your recovery," while an interesting chapter is entitled "When Blue Days Come." The specialist will find nothing new. The book is not intended for him, but he will find little to criticize. The book is "orthodox," and will be of service in the sanatorium, public library and consumptive's family.

LES NOUVELLES MÉTHODES D'EXAMEN DU CŒUR EN CLINIQUE. Par R. Lutembacher. Paper. Price, 20 francs, net. Pp. 186, with 36 illustrations. Paris: Masson et Cie, 1921.

The new methods that are here discussed are the employment of the polygraph and the roentgen ray. The value of the former in untangling the intricacies of the irregularities, together with the modern views as to the nature of these arrhythmias, is clearly set forth. The way in which the roentgen examination may be of help in the explanation of various changes in the size and shape of the heart and large vessels is explained in convincing manner. There are some unusually fine pictures of diseased hearts, whose roentgenograms are represented by helpful diagrams. Electrocardiography is briefly considered. Altogether, the book is a reliable and helpful guide in the field of cardiac diagnosis.

MEDIZINISCHE TERMINOLOGIE. Ableitung und Erklärung der gebräuchlichsten Fachausdrücke aller Zweige der Medizin und ihrer Hilfswissenschaften. Von Walter Guttmann, Oberstabsarat a.D., Berlin. Fifteenth edition. Cloth. Price, 90 marks. Pp. 1311, with 464 illustrations. Berlin: Urban & Schwarzenberg, 1920.

Few dictionaries take advantage of the excellent economic principle so well exemplified by Guttmann's Medizinische Terminologie. It omits the vast body of ordinary medical words known to every one, unless it is the very beginner, and thereby gains space for an ample and intelligible definition of the less known and more difficult terms. For this reason, the amount of clear and reliable information that is contained in this one volume is astonishing.

THE SPHYGMOMETER: ITS VALUE IN PRACTICAL MEDICINE. By William Russell, M.D., LL.D., Consulting Physician, Royal Infirmary, Edinburgh. Cloth. Price, $2.50. Pp. 145, with 14 illustrations. New York: William Wood & Company, 1921.

The twelve chapters of this book are made up largely of an elaboration and extension of the George Alexander Gibson Memorial Lectures delivered in May, 1920, and of clinical lectures, many of which have already appeared in various journals. There is much repetition, and the treatment of

various topics is often fragmentary. Emphasis is laid on Russell's contention that arteriosclerosis and atheromatosis are two distinct processes; also that what is measured by the sphygmomanometer is not alone the blood pressure proper but also the resistance offered by the vessel wall that may be diseased or that may be hypertonically contracted. Numerous illustrative cases are cited, some of which are quite instructive, particularly those concerned with angiospasm. The work is suggestive rather than convincing. One gets from it useful hints rather than a broad discussion of the sphygmomanometer and the disease conditions in the study of which this instrument is helpful.

Miscellany

THE FUNCTIONS OF THE OMENTUM

Although the functions of the omentum have received only cursory attention in medical literature, it plays such a definite part in both normal and pathologic abdominal conditions that it should not be neglected. That fluids are absorbed from the peritoneal cavity was known by Aristotle, although the route of absorption is still in dispute. Moreover, Shipley and Cunningham[1] demonstrated that "true and pseudo-solutions and granules of particulate bodies" are absorbed by the omental vessels, and others have shown that the lymphatic plexuses under the diaphragm absorb considerable fluid and soluble elements.[2] Undoubtedly the relative osmotic pressures influence the rate and extent of absorption, and posture also plays a part, as indicated by the favorable effects of Fowler's position in general peritoneal infections.

When foreign bodies are introduced into the peritoneal cavity, they soon become encapsulated by the omentum and, if they are of organic nature, they are removed by absorption. LePlay[3] found that even the resected omentum when left in the abdomen retains the power of reaction to foreign bodies. It has long been known that the omentum, in many cases, seems to move to the site of acute peritoneal infection, this tendency being so characteristic that the omentum has been called "abdominal policeman," "friend in need" and "the great leukocyte." Norris[4] showed that the omentum is entirely devoid of muscle, so that it seems logical to accept the view of Rubin[5] and others that it does not possess the power of independent movement, but that the active peristalsis of the intestine, assisted by diaphragmatic movements and the adhesive property of the inflamed serous coverings, pushes the omentum over an inflamed area.

Another function ascribed to this unusual tissue is the sealing of perforations of hollow viscera, and surgeons generally make use of this property not only to strengthen lines of intestinal anastomosis but also for support of the walls of various organs.

The omentum contains many phagocytic cells (Metchnikoff), singly and in islands along blood vessels; Norris showed that it picks up bacteria, and Buchtel[6] found that animals deprived of the omentum were less resistant than normal animals to induced peritoneal infection. Then, Cunningham[7] demonstrated recently that animals deprived of the omentum produced fewer cells of the plasmatocyte type than normal animals, in the exudate formed in response to peritoneal irritation. It remains now to determine whether phagocytic action is the only anti-infectious property of the omentum, or whether it also takes part with the spleen, marrow and other organs in the development of antibodies.

DeRenzi and Boeri[8] believe, on the basis of experiments in animals in which vascular supply to the spleen was cut off, that life depends solely on the presence of an intact omentum under such circumstances. In the animals surviving, the spleen became converted into a fibrotic mass completely encapsulated by the omentum. This function has been further studied in experimental strangulation of large segments of the gastro-intestinal tract,[9] and when the viability of strangulated intestines seems questionable or the patient is in a too precarious condition for extensive resection, the omentum may prove an invaluable agent of vascularization.

To summarize, the omentum is an important factor in absorption; it is capable of walling off localized peritoneal infections and of encapsulating foreign bodies; it has considerable anti-infectious power, and it may be used to furnish a new vascular supply to strangulated organs. Whether the omentum has still other functions remains for future investigation to determine. Clearly, the surgeon at all times should do his best to preserve this remarkable structure because of the wide range of its protective functions.

1. Shipley, P. G., and Cunningham, R. S.: Am. J. Physiol. 40: 75 (March) 1916.
2. Bolton, C.: J. Path. & Bacteriol. 24: 429 (Oct.) 1921. Buxton: J. M. Res. 15: 189, 1906; 16: 17, 1907. Wells: J. Infect. Dis. 4: 582, 1907; Am. J. Physiol. 18: 156, 1907.
3. LePlay: Compt. rend. Soc. de biol. 72: 484, 1911.
4. Norris, C. C.: Univ. Pennsylvania M. Bull. 21: 119, 1908.
5. Rubin: Surg., Gynec. & Obst. 12: 117, 1911.
6. Buchtel: Denver M. Times & Utah M. J. 31: 305, 1911.
7. Cunningham, R. S.: Am. J. Physiol. 59: 1 (Jan.) 1922.
8. DeRenzi and Boeri: Berl. klin. Wchnschr. 34: 773, 1903.
9. Bloomhardt, S. L.; Andrews, C. F., and Hetherington, R. R.: Surg., Gynec. & Obst. 24: 474 (April) 1917.

MEDICINE AND PUBLIC HEALTH IN RUSSIA

In a late issue of *Paris médical* is an interview with Prof. Sokoloff, published by *Le Matin*. After being one of Metchnikoff's co-workers, he filled several positions in Russia, having been finally authorized by the Soviet régime to continue his research work after serving several terms in prison. According to him, Russian laboratories have been curtailed by the present government to such a degree that they have ceased to operate almost completely. There are, however, some exceptions, the most important of which is the laboratory of the noted physiologist, Pavloff. The only research that actually can be carried out is on epidemic diseases and especially typhus fever, which shows how worried the Soviet government is about this disease. Several interesting results have been obtained in these investigations, especially by Prof. Zlatogoroff and his co-workers at Petrograd. They have established that heated blood from typhus fever patients in the fifth to the tenth day of the disease can be used as a preventive vaccine. When injected subcutaneously in small doses this blood is harmless. There has also been demonstrated that the susceptibility to typhus fever is five times as great among the nonvaccinated as among the vaccinated. The serum of typhus convalescents secured from two to twelve days after defervescence can be used for curative purposes with good results. For this serum treatment there are used serums obtained from several patients. Results nearly as encouraging have been obtained in the case of cholera, especially by Professor Gamaleia, with a "volatile vaccine." Russian physicians have suffered so much from epidemic diseases that from 1917 to the middle of 1920, half of them had died, and among the survivors hardly one has failed to suffer several attacks of some epidemic disease. Russian physicians are very poorly paid under the Soviet régime. At present they are treating free of charge their old bourgeois clientele. The paying patients now are the bureaucrats and *nouveaux riches*. Recently, Dr. Ott, the professor of gynecology at Petrograd, asked a 100,000 rubles fee for a minor operation on Zinovieff's wife and it was not considered very high. For fear that private practice would make physicians too independent, the government, since the last part of 1920, has forbidden them to make more than fifty calls a month on private patients. This fact must be proved by a numbered register of prescriptions. It is figured out that the number of cases of epidemic diseases during the last three years has reached a total of about 32 millions. The death rate has been 6 per cent., i. e., 2 million people. From typhus fever alone, over 400,000 died from 1918 to 1920. In some towns it was necessary to institute a "death week" during which the whole population engaged in burying corpses. On the other hand, some diseases have nearly disappeared under the Soviet régime. Obesity and rheumatic sequels are very rare, as is also heart enlargement due to fatness.

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Medicolegal

Lawyers Not Liable for Pay of Physician as Witness

(Potter v. Austin et al. (N. Y.), 190 N. Y. Supp. 712)

The Supreme Court of New York, Appellate Term, First Department, says that this was an action by the plaintiff, a physician, against the defendants, who were attorneys, to recover the sum of $50, the reasonable worth of services performed for them, consisting of attendance in court and testimony given for their client, at their special instance and request. The plaintiff testified that she received a subpena from the defendants to go to court and testify in the case of one Anna M. Synder against her landlord; that pursuant to said subpena she attended court and gave testimony in the trial of that case, and thereafter sent her bill for $50 to the defendants. Sarah Synder, a witness called in the plaintiff's behalf, testified as to the attendance at court of the plaintiff in the action of Anna M. Synder against the landlord, and that there was on deposit in the city chamberlain's office the infant's share (apparently the action was brought on behalf of an infant) of what was collected; that the lawyers, meaning the defendants in this case, told her and her husband that they would pay the physicians as witnesses and would subpena the plaintiff. She said, "They would pay the witnesses. They told us right in their own office that they would pay witnesses that they subpenaed—the doctors." The defendants denied all the allegations of the complaint except as to their copartnership and the plaintiff's authorization to practice in the state of New York, and set up as a separate and distinct defense that if any services were rendered by the plaintiff at their request, the request was made by them as agents and not as principals, with which fact the plaintiff was thoroughly conversant. The plaintiff did not testify as to any agreement with the defendants; and nowhere in the minutes did it appear that the testimony of the plaintiff was requested by the defendants with any agreement to pay her for her services; but it did appear from the plaintiff's own testimony that she was subpenaed as a witness, and as such she was, therefore, the court holds, only entitled to witness fees. The defendants acting as agents for a known principal and in the absence of a special agreement, their client and the fund were the proper sources out of which the plaintiff's services should be paid. In the trial court the plaintiff obtained a verdict and judgment for $50, but that judgment is reversed, with $30 costs, and the complaint dismissed on the merits, with costs.

Cruelty in Attempt to Have Wife Adjudged Insane

(Michels v. Michels (Me.), 115 Atl. R. 161)

The Supreme Judicial Court of Maine, in overruling exceptions to a decree of divorce for Mrs. Michels, says that a jury found in her favor on the allegation of cruel and abusive treatment. The outstanding fact, on which she placed great emphasis, was an attempt of her husband to have her committed to the state hospital for the insane, charging that she was insane. This unsuccessful charge of insanity, with its attendant publicity, might or might not constitute cruel and abusive treatment. It depended on the motive which prompted the institution of the proceedings. If the application, although unsuccessful, was made in good faith, in the honest and sincere belief that the wife was in such an unsettled mental condition that her own good and that of her family required her confinement and treatment in such an institution, such an act would be regarded as lacking entirely the essential element of cruel and abusive treatment. It would spring from kindness rather than cruelty. If, on the other hand, the husband, without just cause, wilfully attempted to have her committed to an insane asylum, such conduct seriously affecting her health, his act would obviously constitute cruel and abusive treatment within the meaning of the statute. In other words, it was not merely the act itself, but the motive which inspired the act, that was to be rigidly inquired into and determined by the jury, in this case; and a significant fact, which must have carried great weight, was that, only two months after his failure to secure his wife's commitment, the husband instituted proceedings to have a conservator appointed to take charge of his wife's property, alleging that, by reason of mental weakness, she had become incapacitated to care properly for her property. Here again the question of good faith or wilful persecution on the part of the husband was the crucial point; and the attempt to deprive her of the management of her property, like that to deprive her of her liberty, failed. Under all the circumstances, she was entitled to a decree of divorce.

Action for Services Rendered Nonresident Patient

(Page v. Peden (Iowa), 184 N. W. R. 1033)

The Supreme Court of Iowa, in affirming a judgment in favor of the plaintiff, in an action on an account, says that the defendant, formerly a resident of Iowa, became a resident of South Dakota in the spring of 1919. In the fall of that year, she returned to Iowa, where the plaintiff, a physician, attended her during confinement. It was to recover for those services that this action was brought. The defense relied on was the statute of limitations of South Dakota, which is six years on an open account. The contention was that, as that period had elapsed between the rendition of the services and the commencement of this action, it was barred under the provisions of the South Dakota statute. This position, however, was untenable. The section of the Iowa code says that when a cause of action has been fully barred by the laws of any country where the defendant has previously resided, such bar shall be the same defense in Iowa as though it had arisen there, but its further plain provision does not apply to causes of action arising within the state of Iowa. The services in question were rendered by the plaintiff, and the cause of action arose, in Iowa. It was, therefore, immaterial that the action could not be maintained in South Dakota because of the bar of the statute of that state.

Effect of Epilepsy on Testamentary Capacity

(In re Derusseau's Will (Wis.), 184 N. W. R. 705)

The Supreme Court of Wisconsin says that it has been surprised to find that the effect of epilepsy on testamentary capacity has been so seldom passed on by the courts of last resort. Only one such case was cited in the briefs of counsel, namely, *In re Michael Lewis' Will*, 51 Wis. 101, 7 N. W. 829. In the present case, the will in question was executed on April 29, 1912, a brother-in-law being named sole beneficiary, brothers and sisters of the testator being expressly excluded. At the same time, a contract was entered into between the brother-in-law and the testator, whereby the former, in consideration of $15 a month and his being named sole beneficiary, agreed to take the testator into his home and provide food, clothing, and medical attention for him during his life, and care for him as he would for one of his own infant sons. In January, 1917, the testator was removed to an asylum for the insane. He died in August, 1918, at the age of 39 years. The evidence showed that by his industry and frugality, notwithstanding the untoward conditions of his life, he had increased his small inheritance from $2,000 to $3,500. In a small way, he had become a capitalist, and had invested and reinvested his money with at least average prudence. Still it was strongly urged that any preponderance of the testimony as to the general business capacity of the testator was overcome by the fact that he had been an epileptic since infancy. There was testimony that he sometimes had epileptic seizures once or twice a day, sometimes once or twice a month; that sometimes he would be unconscious for an hour, sometimes for a day. But there was no proof of any seizure for some weeks before or after the execution of the will. The testimony showed that he first went to his notary public, and then to the man who prepared the will, and on both occasions in their judgment seemed in a normal frame of mind. Undoubtedly, he had long been the victim of a deplorable mental disease, and there probably had been some impairment of his mental powers before the execution of the will. Moreover, the testimony convinced the court that his mental and physical condition had greatly changed in the interval between the execution of the will and the commit-

ment to the asylum. However, presumptions are not generally retrospective, and even if he was insane at the time of the commitment, it did not follow that he was insane four years and eight months before.

Neither insanity nor testamentary incapacity can be presumed from the fact that a testator has long suffered from epilepsy. It is true that such a condition may be an important fact, in connection with other facts, in the determination of the question; but it is a matter of common knowledge that many persons have long been the victims of this dread disease, and yet possessed in the intervals between attacks a high degree of mental power. It cannot be said that, because a person is an epileptic, he is therefore insane.

There was no testimony that the testator had hallucinations or delusions in the intervals between attacks. Neither the will nor the accompanying agreement was so complicated as not to be easily understood. The court is convinced from the whole testimony, including that relating to epilepsy, that the testator had sufficient capacity to comprehend perfectly the condition of his property, his relations to the persons who were or should or might have been the objects of his bounty, and the scope and bearing of the provisions of his will, and that he had sufficient active memory to collect in his mind, without prompting, the particulars or elements of the business to be transacted, and to hold them in his mind a sufficient length of time to perceive at least their obvious relations to each other, and be able to form some rational judgment in relation to them. The court therefore holds with the county judge and the circuit judge that the testator was competent to execute the will. He was profoundly conscious of his sad condition, and know that he could not be a welcome inmate in the households of his brothers and sisters, so the court does not think that it was unnatural for him under the circumstances to make some provision with his little property by which his deplorable condition could be to some extent ameliorated; and the court does not think that testamentary provisions of this character should be lightly set aside.

Physicians May Testify to Nonprofessional Matters

(Minnis v. Steele (Ind.), 132 N. E. R. 702)

The Appellate Court of Indiana, Division No. 2, referring to the parties in this case as appellant and appellee, says that appellee Steele filed a claim against the estate of a Mrs. Minnis for services rendered through a term of years, and obtained a judgment, which is affirmed. One of the contentions of the appellant, who was the administrator of the estate of Mrs. Minnis, was that it was error to permit a physician to testify as to certain conversations he had had with Mrs. Minnis, wherein she said that she wanted the appellee to be well paid for her services and that she wanted him to see that she was paid for such services. The witness testified that he had been the family physician of Mr. and Mrs. Minnis for more than thirty years; that Mrs. Minnis visited him at his office on business and talked to him about the appellee; that Mr. and Mrs. Minnis both came to his office and consulted him about their business, talked to him about the appellee, and talked over what they should give her, that she should be paid for her services. In short, the witness appeared to have been a personal friend and business adviser of Mr. and Mrs. Minnis as well as their family physician. They went to him with their business troubles and advised with him, and on such occasions talked with him concerning the appellee, and on at least one of such visits said they wanted her to be well paid for her services. Except as otherwise provided, all persons are competent witnesses in civil proceedings. The Indiana statute provides that "physicians, as to matters communicated to them, as such, by patients in the course of their professional business, or advice given in such cases," are not competent witnesses. The facts about which this physician testified were not matters reasonably within his professional business, or about which he would be expected to give advice, or that would likely be communicated by a patient to a physician as such. The fact that the witness was the family physician of Mrs. Minnis did not render him an incompetent witness as to the conversations about which he testified.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, St. Louis, May 22-26. Dr. Alex. R. Craig, 535 N. Dearborn St., Chicago, Secretary.

Alabama, Medical Association of the State of, Birmingham, April 20-23. Dr. H. G. Perry, Montgomery, Secretary.

American Association of Genito-Urinary Surgeons, Washington, D. C., May 2-3. Dr. R. F. O'Neil, 374 Marlborough St., Boston, Secretary.

American Ass'n of Pathologists and Bacteriologists, Washington, D. C., May 2-4. Dr. H. T. Karsner, Lakeside Hospital, Cleveland, Secretary.

American Association of Physicians, Washington, D. C., May 2-4. Dr. Thomas McCrae, 1627 Spruce St., Philadelphia, Secretary.

American Bronchoscopic Society, Washington, D. C., May 3. Dr. Samuel Iglauer, 701 Race St., Cincinnati, Secretary.

American Climatological and Clinical Association, Washington, D. C., May 2-4. Dr. Arthur K. Stone, Framingham Center, Mass., Secretary.

American Dermatological Association, Washington, D. C., May 2-4. Dr. Udo J. Wile, University of Michigan, Ann Arbor, Secretary.

American Gastro-Enterological Association, Washington, D. C., May 1-2. Dr. Arthur F. Chace, 525 Park Ave., New York, Secretary.

American Gynecological Society, Washington, D. C., May 1-3. Dr. A. H. Curtis 104 S. Michigan Ave., Chicago, Secretary.

American Laryngological Association, Washington, D. C., May 1-3. Dr. George M. Coates, 1811 Spruce St., Philadelphia, Secretary.

American Laryng., Rhinol. and Otological Society, Washington, D. C., May 4-6. Dr. W. H. Haskin, 40 E. 41st St., New York, Secretary.

American Neurological Association, Washington, May 2-3. Dr. Frederick Tilney, 22 E. 63d St., New York, Secretary.

American Ophthalmological Society, Washington, D. C., May 1-3. Dr. T. B. Holloway, 1819 Chestnut St., Philadelphia, Secretary.

American Orthopedic Association, Washington, D. C., May 2-4. Dr. De Forest P. Willard, 1630 Spruce St., Philadelphia, Secretary.

American Otological Society, Washington, D. C., May 2-3. Dr. Thomas J. Harris, 104 E. 40th St., New York, Secretary.

American Pediatric Society, Washington, D. C., May 1-3. Dr. H. C. Carpenter, 1805 Spruce St., Philadelphia, Secretary.

American Psychopathological Association, Washington, D. C., May 1. Dr. Sanger Brown, 2d, 118 E. 80th St., New York, Secretary.

American Society of Tropical Med., Washington, D. C., May 2. Dr. B. H. Ranson, Bureau of Animal Industry, Washington, D. C., Secretary.

American Surgical Association, Washington, D. C., May 2-4. Dr. John H. Gibbon, 1901 Spruce St., Philadelphia, Secretary.

American Therapeutic Society, Washington, D. C., May 1-2. Dr. Lewis H. Taylor, The Cecil, Washington, D. C., Secretary.

American Urological Association, Atlantic City, May 26-28. Dr. H. G. Hamer, 723 Hume-Mansur Bldg., Indianapolis, Secretary.

Arkansas Medical Society, Little Rock, May 17-19. Dr. William R. Bathurst, 810 Boyle Building, Little Rock, Secretary.

California, Medical Society of the State of, Yosemite, May 9-12. Dr. W. E. Musgrave, Butler Bldg., San Francisco, Secretary.

Congress of Amer. Phys. & Surgs. of North America, Washington, D. C., May 2-3. Dr. W. R. Steiner, 646 Asylum Ave., Hartford, Conn., Sec.

Connecticut State Medical Society, Bridgeport, May 17-18. Dr. C. W. Comfort, Jr., 27 Elm Street, New Haven, Secretary.

Georgia, Medical Association of, Columbus, May 3-5. Dr. Allen H. Bunce, Healy Building, Atlanta, Secretary.

Illinois State Medical Society, Chicago, May 16-18. Dr. W. H. Gilmore, Mount Vernon, Secretary.

International Congress of Ophthalmology, Washington, D. C., April 25-May 3. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Sec'y.

Iowa State Medical Society, Des Moines, May 10-12. Dr. T. B. Throckmorton, Bankers Trust Bldg., Des Moines, Secretary.

Kansas Medical Society, Topeka, May 3-4. Dr. J. F. Hassig, 800 Minnesota Ave., Kansas City, Secretary.

Louisiana State Medical Society, Alexandria, April 11-13. Dr. P. T. Talbot, 1531 Canal St., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-27. J. A. Chatard, 1211 Cathedral St., Baltimore, Secretary.

Mississippi State Medical Association, Hazlehurst, May 9-10. Dr. T. M. Dye, Clarksdale, Secretary.

Missouri State Medical Association, Excelsior Springs, May 2-4. Dr. E. J. Goodwin, 3529 Pine Street, St. Louis, Secretary.

National Tuberculosis Association, Washington, D. C., May 4-6. Dr. George M. Kober, 370 Seventh Ave., New York, Secretary.

Nebraska State Medical Association, Omaha, April 24-27. Dr. R. B. Adams, 1011 Terminal Building, Lincoln, Secretary.

New Hampshire Medical Society, Concord, May 17-18. Dr. D. E. Sullivan, 7 North State Street, Concord, Secretary.

New Mexico Medical Society, Gallup, April 28-29. Dr. J. W. Elder, Santa Fe Hospital, Albuquerque, Acting Secretary.

New York, Medical Society of the State of, Albany, April 18. Dr. E. L. Hunt, 17 W. 43d St., New York, Secretary.

North Carolina, Medical Society of the State of, Winston-Salem, April 25-27. Dr. L. B. McBrayer, Sanatorium, Secretary.

Ohio State Medical Association, Cincinnati, May 2-4. Mr. Don K. Martin, 131 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, May 9-11. Dr. C. A. Thompson, 508 Barnes Bldg., Muskogee, Secretary.

Radiological Society of North America, St. Louis, May 19-20. Dr. M. J. Sandborn, Appleton, Wis., Secretary.

South Carolina Medical Association, Rock Hill, April 18-19. Dr. Edgar A. Hines, Seneca, Secretary.

South Dakota State Medical Association, Huron, May 16-18. Dr. Frederick A. Spafford, Flandreau, Secretary.

Tennessee State Medical Association, Memphis, April 11-13. Dr. Otis West, 327 Seventh Avenue, N., Nashville, Secretary.

Texas, State Medical Association of, El Paso, May 9-11. Dr. H. Taylor, Texas State Bank Bldg., Fort Worth, Secretary.

West Virginia State Medical Association, Huntington, May 17-19. Dr. Robert A. Ashworth, Moundsville, Secretary.

Western Electro-Therapeutic Association, Kansas City, Mo., April 20-21. Dr. Charles W. Fassett, 115 E. 31st St., Kansas City, Mo., Secretary.

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Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

March, 1922, **60**, No. 1

Analysis of Nervous Control of Cardiovascular Changes During Occlusion of Head Arteries in Cats. C. S. Winkin, New York.—p. 1.
Rôle of Sodium and Carbonate Ions and of Change in Sodium-Calcium Ratio in Contraction of Isolated Duodenal Segment of Albino Rat. F. S. Hammett and J. E. Nowrey, Jr., Philadelphia.—p. 48.
Rôle of Change in Hydrogen-Ion Concentration in Motor Activities of Small Intestine. F. S. Hammett, Philadelphia.—p. 52.
*Electrical Conductivity of Animal Tissues Under Normal and Pathologic Conditions. G. W. Crile, H. R. Hosmer and A. F. Rowland.—p. 59.
Effect of Diet on Weight of Hypophysis and Thyroid of Albino Rat, and on Action of Their Extracts on Isolated Small Intestine. L. M. Degener, Philadelphia.—p. 107.
Variations in Output of Bile Salts and Pigments During Twenty-Four Hour Periods. F. P. Wisner and G. H. Whipple, San Francisco.—p. 119.
Relationship Between Nervous and Hormone Control of Respiratory Center. J. J. R. Macleod and S. U. Page, Toronto.—p. 134.
Sensory Stimulation by Saturated Monohydric Alcohols. M. Irwin, Cambridge, Mass.—p. 151.
Responses of Circulation to Low Oxygen Tension. VI. Cause of Changes Observed in Heart During Extreme Anoxemia. C. W. Greene, Columbia, Mo., and N. C. Gilbert, Chicago.—p. 155.
*Influence of Blood Serum on Coagulative Activity of Tissue Extracts. C. A. Mills and S. Mathews, Cincinnati.—p. 193.

Electrical Conductivity of Animal Tissues.—From the experimental data presented by Crile, et al., it would appear that the intracellular changes in exhaustion and shock which are revealed by the microscope are paralleled by alterations in electric conductivity, and that both the histologic and the electric changes bear a direct relation to the vitality of the organ.

Influence of Blood Serum on Coagulative Activity of Tissue Extracts.—Rabbit serum has been found to be capable of causing as high as a thirty-fold increase in the coagulative activity of lung extract. This effect is gradually replaced by a diminution in the activity of the extract below the original as the mixture is left standing. According to Mills and Mathews, normal serum possesses this same power, but to a less degree, both as regards the primary activation and the later inactivation. Syphilitic serum acts exactly as does the normal serum. The practical importance of this activation of tissue extracts lies in its relation to the intravenous injection of protein solutions, such as organ extracts or blood serum, which may be harmless alone but may be activated sufficiently by the patient's blood to become exceedingly toxic.

American Journal of Public Health, Chicago

March, 1922, **12**, No. 3

Campaign Against Yellow Fever in Mexico. F. C. Najera, New York.—p. 181.
Present Sanitary Conditions at Guayaquil with Special Reference to Yellow Fever. C. V. Coello, Guayaquil.—p. 188.
Use of Fresh Water Fish as Consumers of Mosquito Larvae in Containers Used in Home. M. E. Connor.—p. 193.
Work of Massachusetts-Halifax Health Commission. B. F. Royer, Nova Scotia.—p. 195.
Import Diseases as They Affect Work of New York City Health Department. R. S. Copeland, New York.—p. 202.
Functions of Public Health Laboratory in Controlling Import Diseases. W. H. Park, New York.—p. 204.
Report of Committee on School Health Program.—p. 207.
Fatigue in Industry. E. L. Fisk, New York.—p. 212.
Relation of Public Health Nursing to Other Phases of Work of State Board of Health, with Special Reference to That of Division of Child Hygiene. R. M. Ehrenfeld.—p. 218.
New Garbage Reduction Works at Rochester, N. Y. E. A. Fisher, Rochester, N. Y.—p. 222.
Value of Cooperation Between Food Manufacturer and Food Official. J. P. Street, Indianapolis.—p. 225.

Archives of Internal Medicine, Chicago

March, 1922, **29**, No. 3

*Clinical Studies on Respiration. IX. Effect of Exercise on Metabolism, Heart Rate and Pulmonary Ventilation of Normal Subjects and Patients with Heart Disease. F. W. Peabody and C. C. Sturgis, Boston.—p. 277.
Studies in Diabetes Insipidus, Water Balance and Water Intoxication. J. F. Weir, E. E. Larson and L. G. Rowntree, Rochester, Minn.—p. 306.
Circulatory Compensation for Deficient Oxygen Carrying Capacity of Blood in Sever Anemias. G. Fahr and E. Ronzone, Madison, Wis.—p. 331.
*Hitherto Undescribed Tumor of Base of Aorta. G. R. Herrmann and M. T. Burrows, St. Louis.—p. 339.
*Bacillus Acidophilus and Its Therapeutic Application. L. F. Rettger and H. A. Cheplin, New Haven, Conn.—p. 356.
Efflux of Blood from Cartoid Artery of Dog and Its Expression by a General Empirical Formula. H. L. Dunn, Minneapolis.—p. 368.
Study of Blood Sugar Curves Following a Standard Glucose Meal. W. H. Olmstead and L. P. Gay, St. Louis.—p. 384.

Effect of Exercise in Heart Disease.—The investigations made by Peabody and his associates concerning dyspnea made on eleven ambulatory patients with heart disease disclosed that the oxygen consumption and heart rate were slightly greater than in a similar group of normal subjects while standing at rest. Under the same conditions the minute volume of the respiration was much greater in the patients with heart disease and the breathing was more rapid and more shallow. The slight amount of exercise involved in walking up sixty steps produced the same relative changes in oxygen consumption, pulmonary ventilation and heart rate in the two groups, but it caused more subjective dyspnea in the patients with heart disease. Exercise which was severe enough to cause a corresponding amount of dyspnea in normal subjects caused the same type of changes in oxygen consumption, pulmonary ventilation and heart rate, but they were greater in degree. The response to exercise of patients with heart disease was qualitatively the same as that in normals. Their greater liability to dyspnea depends on a quantitative limitation. Shortness of breath was most noticeable immediately after exercise was stopped, and at this time the pulmonary ventilation was largest. The return to normal of the minute volume of the respiration and of the heart rate was delayed in these patients. It is suggested that the two factors which account for the greater dyspnea in the cardiac patients are the inadequate circulation, which results in a delayed elimination of carbon dioxid, and the tendency to shallow breathing, which necessitates a relatively large pulmonary ventilation.

Tumor of Base of Aorta.—The assertion is made by Herrmann and Burrows that the tumor of the aorta attached to the heart which they found in their case has no counter part in the literature. The clinical symptoms were largely those of a tumor of the heart and gradually progressing myocardial change. Dyspnea was the chief symptom. In addition an ashen pallor, conspicuous cyanosis of the body and dilatation of the superficial abdominal veins on standing, and the spread of the cyanosis to the face on reclining, was such as might have resulted from a tumor pressing on the venae cavae. The roentgenogram of the chest taken at this time showed a shadow to the right and below the third rib which led to the provisional diagnosis of cardiac tumor. The electrocardiographic findings pointed definitely to pathology in the auricular muscle which, as necropsy showed, was associated directly with a tumor pressing on the auricle and atrophy of the underlying auricular muscle. The necropsy showed that this was a massive atheromatous tumor of what appeared to be an atypical arterial branch of the aorta. This branch or pedicle had the appearance of an artery obliterated by an excessive proliferation of its intima. Microscopically, this tumor was really a progressive degenerating fibrous wall of inflammatory origin. Leaving aside the inflammatory cells present, it was the picture of the ordinary atheromatous patch of the aorta. There was no evidence that it was or had been a neoplasm.

Bacillus Acidophilus in Treatment of Constipation.—The value of the *B. acidophilus* treatment was studied by Rettger and Cheplin in cases of chronic constipation with the symptoms of so-called autointoxication and other accompanying pathologic conditions, some of them acute; chronic diarrhea following an attack of bacillary dysentery; colitis, at times bloody, and more or less mucous; sprue and dermatitis (eczema). Viable cultures of *B. acidophilus* when used in sufficient amount and under the right conditions have important therapeutic properties. They are of particular merit in the treatment of chronic constipation and of diarrhea. The

fullest benefit from the acidophilus treatment can be derived only when thorough bacteriologic examinations of the feces are made at frequent intervals.

Archives of Ophthalmology, New Rochelle, N. Y.

March, 1922, **2**, No. 2

Use of Living Sutures in Treatment of Ptosis. W. W. Wright, Toronto, Can.—p. 99.
Industrial Trauma in Relation to Development of Ocular Tuberculosis, Syphilis and Neoplasm. H. Barkan, San Francisco.—p. 103.
Ocular Manifestations of Multiple Sclerosis. W. A. Holden, New York.—p. 114.
Primary Intraneurol Tumors (Gliomas) of Optic Nerve. F. H. Verhoeff, Boston.—p. 120.
Nonsurgical Treatment of Malignant Epibulbar Neoplasms. E. B. Heckel, Pittsburgh.—p. 141.
Cysts and Cystic Tumors of Caruncle: with Special Reference to Sebaceous Cysts. J. Green, Jr., St. Louis.—p. 145.
Operating Hand Lamp for Ophthalmic Work. A. M. Ramsay, Glasgow.—p. 152.
Trifocals Minus Wafers. T. R. Chambers, Jersey City, N. J.—p. 154.
Remarks on Dr. C. Koller's Paper, "Physiologic Mode of Action of Mydriatics and Miotics—Explaining Their Effect in Hypertension (Glaucoma)." M. J. Schoenberg, New York.—p. 156.

Boston Medical and Surgical Journal

March 16, 1922, **186**, No. 11

*Acute Pancreatitis. D. F. Jones, Boston.—p. 337.
*Indications for Operation in Treatment of Injuries Involving Brain. D. Munro, Boston.—p. 342.
Concerning Type of Injury to Renal Epithelial Cells Which Increase Susceptibility of Cells to Action of General Anesthetics. W. DeB. MacNider, Chapel Hill, N. C.—p. 350.
Acute Puerperal Inversion; Report of Case. J. P. Cohen, Boston.—p. 352.

Acute Pancreatitis.—Experimental and clinical findings lead Jones to believe that there are probably two types of acute pancreatitis, with quite different etiology: (*a*) Interstitial pancreatitis due to infection of the interstitial tissue, the infection coming frequently from the biliary system; (*b*) pancreatic necrosis, a necrosis of the parenchymal cells, due to retrojection of bile into the duct of Wirsung or duodenal contents into the duct of Santorini. The treatment of the interstitial type, due to infection from a cholecystitis, is cholecystectomy. The treatment of pancreatic necrosis is drainage of the fatty capsule of the pancreas, and the pancreas itself. In addition, if the condition of the patient will permit, either the sphincter of Oddi may be cut, a choledochostomy or cholecystostomy done, depending upon the condition of the patient and the condition of the gallbladder and ducts found at operation.

When to Operate for Brain Injuries.—The indications for operation in injuries involving the brain according to Munro are: compound fracture of the skull, depressed fracture of the skull, and a rise in the intracranial cerebrospinal fluid pressure. He advises that all cases in which an injury to the brain has been sustained or is suspected, no matter how slight, should, as soon as the patient has recovered from the surgical shock, have the pressure of the cerebrospinal fluid measured, and the treatment should be based primarily on this finding alone.

California State Journal of Medicine, San Francisco

March, 1922, **20**, No. 3

*Treatment of Lacerated and Infected Cervix Uteri. A. V. Pettit, San Francisco.—p. 78.
*Investigation of "Provocative Wassermann" Controlled by Icebox Method. R. T. Shepardson, San Francisco.—p. 80.
Operability of Senile Prostate. W. B. Dakin, Los Angeles.—p. 83.
Diarrhea in Infants in Relation to Certain Food Intolerances. H. H. Yerington, San Francisco.—p. 85.
*Meaning of Passage of Intrapartum Meconium. M. Schulze, San Francisco.—p. 87.
Determination of Extent and Nature of Renal Lesion in Bright's Disease. T. Addis, San Francisco.—p. 90.
Recent Advances in Diagnosis and Treatment of Hay Fever and Asthma. A. H. Rowe, Oakland.—p. 94.
*Styloid Process in Tonsillectomy. J. A. Bacher, San Francisco.—p. 99.
Glucose and Alkalies in Surgery. A. Weeks and L. Briggs, San Francisco.—p. 100.

Treatment of Lacerated and Infected Cervix Uteri.—In hospital obstetric practice, in trained hands, Pettit considers the best prophylactic procedure against the development of infection of the cervix to be the routine exposure of the cervix in primiparas, after delivery, and suture of the lacerations. For the cure of infection and lacerations of the cervix, with the accompanying symptoms, certain types of amputation are the operations of choice. Trachelorrhaphy is preferable to cauterization if future pregnancy is a consideration. Cauterization, for the treatment of infection of the cervix, should only be undertaken if future pregnancy is no longer a consideration. The Sturmdorff conical enucleation of the glandular elements of the cervix possesses the virtue of high amputation, and should give the least possible interference with future pregnancies.

Provocative or Repeated Wassermanns.—Shepardson says that an equally valuable and less time consuming and laborious procedure is to have the patient return for repeated Wassermanns (to be done by both icebox and water bath methods) at varying intervals depending on the clinical indications and history. A so-called "provocative reaction" does in all probability occur. However, one cannot be sure in the face of all the uncertainties of the Wassermann reaction, that this effect is not due to some imperfectly comprehended factor either in serum, reagents, or technic. If a positive Wassermann does justify treatment, and in 17 per cent. of cases this can be obtained by the "provocative" procedure, it might be worth while employing in private practice, but not in clinical practice, where the amount of time necessary for the patient to stay away from work is too great to justify any benefit the patient might receive thereby.

Meaning of Passage of Intrapartum Meconium.—The passage of meconium by the child during labor, Schulze says, is in a large majority of cases entirely independent of fetal asphyxia. The passage of old meconium at the time of rupture of the membranes is of no prognostic value as to the later development of asphyxia. Passage of fresh meconium with rupture of the membranes, or later in labor, may or may not be associated with asphyxia. In the latter case changes in the fetal heart sounds are present also. Meconium appearing after other signs of fetal distress is frequently a sign of the onset of very deep asphyxia and the child may perish even though delivery be accomplished very rapidly. A strikingly high proportion of overlarge children pass meconium, in most cases without serious significance. The cause of the passage of meconium in cases without asphyxia cannot as yet be stated definitely.

Elongated Styloid Process.—Two cases of elongated styloid processes, presenting in the tonsillar fossae, have come under Bacher's observation. In neither of the cases was the diagnosis made before tonsillectomy. In the first case inspection of the fossa after uncomplicated tonsillectomy showed a sharp prominence covered with muscular tissue extending from above downward rather close to the anterior pillar. In the second case a snare wire was placed around the process and a roentgenogram made with the wire hanging from the process. Convalescence was uncomplicated in both cases.

Colorado Medicine, Denver

February, 1922, **19**, No. 2

Feeding Newborn Infant. F. P. Gengenbach, Denver.—p. 26.
Malnutrition in Children. E. L. Timmons, Colorado Springs.—p. 29.
Joint Injuries, with Special Reference to Fractures Extending into Joint. C. E. Tennant, Denver.—p. 32.
Indiscriminate Diagnosis of Tuberculosis. M. Levy, Denver.—p. 37.
Psychotherapy in Convulsive Disorders. E. J. A. Rogers, Denver.—p. 40.

March, 1922, **19**, No. 3

*Multiple Diverse Tumors Affecting Spinal Cord. P. Work, Pueblo.—p. 50.
Median Bar at Vesical Orifice. W. M. Spitzer, Denver.—p. 53.
Cystitis: Diagnosis. H. T. Low, Pueblo.—p. 59.
Treatment of Neurosyphilis. L. V. Tepley, Denver.—p. 63.

Tumors of Spinal Cord.—Work reports a case which demonstrates the examination findings of an extramedullary tumor, with unusually long duration of nonincapacitating symptoms with some operative relief, and the most unusual condition of two lesions, one epidural, the other subdural and of different pathology, the record of which was not suspected at the time of the first operation and which was not influenced by surgery. It further shows that in cord obstruction cases the localizing phenomena are those proper

to the fiber highest point of interference with conduction. The growth first removed (epidural) was a mass of irregularly placed yellow connective tissue, apparently originating from an intervertebral disk, a fibroma. The subdural specimen last removed was a cyst wall firm and dense in consistency showing calcification and was classed as an osteoma.

Illinois Medical Journal, Oak Park

March, 1922, 41, No. 3

Symposium on The A. M. A. and Its Component Societies Before North Side Branch of Chicago Medical Society, Feb. 2, 1922.—p. 165.
*Relation of Splenic Syndromes to Pathology of Blood. W. J. Mayo, Rochester, Minn.—p. 175.
Certified Milk. J. W. Van Deralice, Chicago.—p. 181.
Headache From Standpoint of Ophthalmology and Otolaryngology. G. H. Mundt, Chicago.—p. 183.
Effect of Occlusion of Coronary Arteries on Heart's Action and Its Relationship to Angina Pectoris. W. T. Longcope, New York.—p. 186.
New Bactericidal Agent (Neo-Silvol) for Use in Conjunctival Sac. H. S. Gradle, Chicago.—p. 193.
Tumors of Breast. C. E. Black, Jacksonville, Ill.—p. 193.
Chronic Intestinal Stasis. J. G. Young, Pontiac, Ill.—p. 201.
Dislocations and Fracture-Dislocations Occurring at Acromioclavicular Articulation. R. W. McNealy, Chicago.—p. 202.
*Anterior Branch of Middle Meningeal Artery; Its Anatomic Tunnel and Surgical Importance. J. E. Rowan, Chicago.—p. 205.
Roentgen-Ray Treatment of Carcinoma of Breast. A. W. Erskine, Cedar Rapids, Ia.—p. 209.
Medical Aspects of Malnutrition in Children. C. Hedger, Chicago.—p. 211.
Congenital Hypertrophic Pyloric Stenosis. J. A. Graham, Chicago.—p. 215.

Late Results of Splenectomy.—Mayo and his associates have splenectomized twenty-nine patients for splenomyelogenous leukemia with one operative death. This patient died from pulmonary embolus fourteen days after operation. Seven of these twenty-nine patients are known to be alive and in good condition more than three years following the operation, four more than four years, and one more than five years.

Anatomic Study of Middle Meningeal Artery.—The canal which transmits in the living the middle meningeal artery or the anterior branch of same, Rowan proposes to call a tunnel. In eighty-four complete skulls, only 25 per cent. were as described in anatomies, while 75 per cent. contained an anomaly, either a tunnel on both sides in 31 per cent., a tunnel on the right side only in 19 per cent., and a tunnel on the left side only in 25 per cent. In twenty-seven partial skulls examined he found only five free from tunnels, while the remaining twenty-two contained the tunnel for the artery, the percentage being 19 to 81. In the skulls examined he found a total of 110 tunnels in 195 sides, 56.4 per cent. The length of the tunnels varied from 3 to 5 cm. In operations for the removal of the gasserian ganglion and tumors of the brain low in the middle fossa, and especially in the Hartley-Krause operation, it is exceedingly likely that artery will be torn if a body tunnel is present, when reflecting the dura from bone. The roentgen ray fails to reveal whether a tunnel is present or absent. Its findings in regard to this condition are negative in the pictures taken to demonstrate the presence of tunnels in skulls known to contain them. The branches of the middle meningeal artery can be clearly defined, however, in skulls by means of the roentgen ray. It is not possible to tell whether the patient has a tunnel for the anterior branch or not before operation.

Indiana State Medical Association Journal, Ft. Wayne

Feb. 15, 1922, 15, No. 2

Present Day Clinical Cardiology. G. R. Herrmann, Ann Arbor.—p. 39.
Epidemic Encephalitis. W. A. Fankboner, Marion.—p. 47.
Some Professional Short-Comings. W. A. Hollis, Hartford City.—p. 54.
Physician. Mysticism and Symbolism in Relation to History of Medicine. F. B. Wynn, Indianapolis.—p. 57.

Iowa State Medical Society Journal, Des Moines

February, 1922, 12, No. 2

Relation Between Specialist and Profession. R. M. Lapsley, Keokuk.—p. 39.
Medical Profession. F. Billings, Chicago.—p. 40.
Roentgen-Ray Work in Country Practice. C. D. Enfield, Louisville, Ky.—p. 44.
Treatment of Diabetes. E. B. Winnett, Des Moines.—p. 47.
Relation of Hospital Standardization to Obstetrics. M. L. Tinley, Council Bluffs.—p. 49.
Highmorian Empyema. F. L. Secoy, Sioux City.—p. 50.
Outlook for Fourth Era of Surgery. R. T. Morris, New York.—p. 53.
Pyelitis. F. V. Hibbs, Carroll.—p. 54.
*Unusual Indication for Cesarean Section; Case Report. A. B. Deering, Boone.—p. 58.
Rôle of Alkaline Phosphates in Health and Disease. J. H. Dowd, Buffalo.—p. 60.

Hay-Fever and Asthma Cause Cesarean Section to Be Performed.—Deering relates the case of a pregnant woman who was suffering from hay-fever and asthma. For five days she had had a severe cough. She was having pains fairly regularly, every five to six minutes. Every uterine contraction brought on a severe paroxysm of coughing, very similar to the paroxysms of whooping cough. This cough, with which she would choke and frequently vomit, rendered her pains quite ineffectual. Delivery had to be effected by cesarean section.

Journal of General Physiology, Baltimore

March, 1922, 4, No. 4

Theoretical Response of Living Cells to Contact with Solid Bodies. W. O. Fenn, Boston.—p. 373.
Change of Acid Agglutination Optimum as Index of Bacterial Mutation. P. H. De Kruif, New York.—p. 387.
Mechanism of Granular Growth of Rabbit Septicemia Bacillus Type G. P. H. De Kruif, New York.—p. 395.
Agglutination of Red Blood Cells in Presence of Blood Serums. C. B. Coulter, Brooklyn.—p. 403.
Relative Toxicity of Halides and Certain Other Anions. A. T. Cameron and M. S. Hollenberg, Winnipeg, Man.—p. 411.
*Effects of Radium Radiations on White Mice. K. Sugiura and G. Failla, New York.—p. 423.
Banana Gel. G. McGuire and K. G. Falk, New York.—p. 437.
Quantitative Laws in Regeneration. III. Quantitative Basis of Polarity in Regeneration. J. Loeb, New York.—p. 447.
Electrical Charges of Colloidal Particles and Anomalous Osmosis. J. Loeb, New York.—p. 463.

Effect of Radium on Sex Organs of Mice.—Doses of 1.9, 2.4 and 4.9 millicurie hours, produced no local skin effects, but accelerated the growth of the experiment animals. A dose of 6.8 millicurie hours produced a definite but mild skin erythema and retarded the development of lanugo hair. A dose of 1.9 millicurie hours had no apparent effect on the ovaries, while a slightly larger dose, 2.4 millicurie hours, caused permanent sterility. Large sublethal doses produced severe skin burns, retarded the body growth of the animals, but failed to sterilize the males. The males did not show even temporary sterility when the doses of radiation were close to the lethal dose, showing that the testes are more resistant than the ovaries. The ovaries of sterile females were generally atrophied and colored yellow. The normal histologic structure was altered. The characteristic findings were the destruction of the graafian follicles, with absence of ovum cells. The tests and the epididymis of the radiated mice appeared macroscopically and histologically normal, with the presence of abundant spermatozoa.

Journal of Industrial Hygiene, Boston

March, 1922, 3, No. 11

Common Colds in Relation to Industrial Hygiene. H. G. Tobey, Boston.—p. 333.
*Infectious Arthritis of Spine. J. F. Curran and S. F. Foster, Worcester, Mass.—p. 339.
*Epinephrin Hydrochlorid Test (Goetsch Test) in Group of Normal Individuals. W. P. Van Wagenen.—p. 343.
Lighting and Ventilation of Factories, Hours of Labor and Health. J. S. Purdy, Sydney, Australia.—p. 349.

Infectious Arthritis of Spine.—Three cases are cited by Curran and Foster in which a strain of the back led to the discovery of an infectious arthritis. Attention is directed to the fact that many times trivial accidents involving the back are treated as muscular strains, which would be the natural diagnosis from superficial examination. In order to arrest early the more serious disorder of infectious arthritis it is good practice to make a roentgen-ray examination in all cases in which there is the least suspicion. Prompt detection is of assistance in locating any foci of infection, as it permits the application of corrective measures which will improve the patient's general condition. These cases also illustrate the need of particular care by industrial physicians in examining the backs of all employees.

Unreliability of Epinephrin Hydrochlorid Test.—The 20 per cent. of Van Wagenan's series of cases which reacted positively to the test make it seem unlikely that the epinephrin hydrochlorid can always be relied on in cases in which clinical observation is unable to establish a diagnosis of hyperthyroidism.

Journal of Urology, Baltimore

March, 1922, **7**, No. 3

*Lymphocystic Urethral Lesions: Evidence of Systemic Tuberculosis. P. S. Pelouze, Philadelphia.—p. 165.
Urethroscopic Findings in Functional Disorders of the Genito-Urinary Tract. A. L. Wolbarst, New York.—p. 209.
Use of High Frequency Current in Treatment of Lesions of the Deep Urethra. H. M. Young.—p. 221.
*Types of Nephritis which Lead to Uremia. N. B. Foster, New York. —p. 235.
Foreign Bodies in Bladder. R. V. Day, Los Angeles.—p. 243.

Lymphocystic Urethral Lesions.—The chief contention made by Pelouze is to the effect that patients presenting these urethral lesions have somewhere in the body an active tuberculous focus. They remain or recur as long as the coexisting tuberculous focus remains active in spite of all local treatment to the urethra, including destruction of the cysts. In the entire absence of local treatment to the urethra they disappear spontaneously after a more or less prolonged course of antituberculous treatment providing the patient's general health responds. Seventy-five living patients, or 83.3 per cent. of those in whom careful clinical studies were possible, showed strong evidences of an active tuberculous lesion. In these seventy-five cases the lesions were located in the lungs in 82.6; kidneys, 17.3; bladder, 14.6; epididymis, 6.6; prostate, 8.0; seminal vesicles, 1.3; peritoneum, 1.3, and bone, 2.6.

Types of Nephritis Which Lead to Uremia.—The evidence at present available, Foster says, shows only that uremia, in any of its forms, is a result of impaired renal function: the degree of impairment is directly proportionate to the number of renal elements (tubule and glomerulus) damaged. This seems quite probable, although not established.

Kansas Medical Society Journal, Topeka

February, 1922, **22**, No. 2

Basal Metabolism. H. N. Tiben, Wichita.—p. 31.
Characters and Events in Practice of Medicine. O. R. Brittain, Salina. —p. 35.
Doctor and Hospital. J. T. Axtell, Newton.—p. 39.
Fables for Doctor. R. Ade.—p. 41.

March, 1922, **22**, No. 3

Hospitals and Nurses. N. Bridge, Los Angeles.—p. 65.
Interrelations of Glands of Intestinal Secretion. J. T. Scott, St. John. —p. 67.
Fitter Families. E. Ernest, Topeka.—p. 71.

Medical Record, New York

March 18, 1922, **101**, No. 11

*Treatment of Arterial Hypertension with Low Sodium Chlorid Dietary. H. A. Houghton, New York.—p. 441.
Compensation for Ocular Injuries. F. Allport, Chicago.—p. 446.
Bactericidal Value of Antidiphtheritic Serum. F. Herb, Chicago.—p. 451.
Cancer a Blood Disease: Should be Treated as Such. R. Bell, London. —p. 453.
Coryza in Infancy and Childhood. J. H. Marcus, Atlantic City.—p. 455.
Surgical Experiences Before Development of Hospital. T. M. McIntosh, Thomasville, Ga.—p. 457.
Purpura; Report of Case. J. H. Darcy, Sioux City, Ia.—p. 458.
*An Atypical Exanthem. D. Greenberg, New York.—p. 460.

Low Sodium Chlorid Dietary in Arterial Hypertension.—It has become increasingly evident to Houghton that sodium chlorid is the immediate and chief toxic agent, often associated, especially in cases with higher pressures, with excessive retention of water and possibly uric acid. The blood plasma of a patient with arterial tension should regularly show an excess of sodium chlorid content, and a high Ambard threshold. If this result is not obtained, pathologic processes may usually be looked for in the laboratory technic as well as in the patient. If the hypertension does not become normal within a reasonable time, either the patient's diet is not below 2 gm. in sodium chlorid content, which may be determined by a twenty-four hour urinary examination, or advanced anatomic nephritis is present which prevents rapid dechlorinization and dehydration. Time and proper diet will usually produce the desired results. Cardiac complications are immeasurably benefited by reduction of blood pressure, and this is the natural and rational method of giving relief. The low salt diet furnishes the best therapeutic measure.

Atypical Exanthem in Children.—Greenberg discusses three cases of fever associated with a maculopapular rash in children which could not clinically be classified as belonging to any of the well known acute exanthems. The illness began with fever and restlessness and vomiting; a slight congestion of the throat and soft palate. The temperature at the onset was 102.5 F. and fluctuated between 102.5 and 101 F. for the ensuing three days. On the morning of the fourth day the temperature was 100 F. and did not rise that day. About this time there was noticed a faint macular rash over the abdomen and buttocks. The macules were from 0.5 cm. to 1 cm. in diameter, discrete and became slightly papular and more numerous during the following two days, appearing on the thighs, chest, shoulders and a few on the neck. The rash began to disappear on the third day, so that within four days after its first appearance it had almost entirely disappeared. The maculopapular rash was pinkish to red in color and the lesions fairly regular in size and shape, being more or less round or oval. The size of the individual lesion did not vary much except that it became reddish instead of pinkish, and slightly papular instead of macular, as at the onset. The mucous membranes were negative except for slight throat congestion on the first two days. There was no desquamation, no gland enlargement.

Minnesota Medicine, St. Paul

March, 1922, **5**, No. 3

*Anaphylaxis to Food Proteins in Breast Fed Infants and Its Probable Relation to Certain Diseases of Nursing Infant, Especially Exudative Diathesis. W. R. Shannon, St. Paul.—p. 137.
*Manifestations of Spasmophilic Diathesis in Older Children. G. A. Scherer, Duluth, Minn.—p. 143.
Urinary Lithiasis in Children. G. J. Thomas and C. O. Tanner, Minneapolis.—p. 147.
Five Cases of So-Called Acrodynia. M. D. McNeal, Rochester, Minn. —p. 153.
Acute Intestinal Ileus. H. B. Zimmerman, St. Paul.—p. 156.
*Important Points in Differential Diagnosis of Gastric Ulcer and Carcinoma. H. S. Willson, Minneapolis.—p. 162.
Referred Pain in Heart Disease. C. N. Hensel, St. Paul.—p. 166.
*Epidemic of Paratyphoid Fever Among University Students. C. A. McKinlay, Minneapolis.—p. 172.
*Dystocia Due to Ovarian Tumors. F. J. Souba, Minneapolis.—p. 176.

Anaphylaxis to Food Proteins in Breast Fed Infants.—The skin reactions to food proteins were studied by Shannon in fourteen cases that were regarded as probable food disturbances. These infants were either exclusively breast fed or essentially so. Altogether in the entire series forty different food proteins were tried. Of this number twenty-seven foods gave positive reactions in one or more cases. Nine of these foods gave a wheal at the site of inoculation in one or more cases. Seven other foods gave questionable reactions in one or more cases. This leaves only six foods which did not give possible evidence of sensitization in one or more of the fourteen cases studied. Altogether 254 tests were done on the fourteen patients. Eighty of this number gave a positive result. Of these eighty positive tests sixty-nine were in response to foods that the infants had never eaten. Out of the eighty positive tests fourteen showed wheals, and of the fourteen wheals ten were to foods that the infants had never eaten. It is highly improbable that sensitization could have been inherited in these babies when the mothers did not react to skin tests and when they are not conscious of any discomfort on eating these foods. This being true. Shannon says, it must be assumed that sensitization is actively attained and that it could have come about only as a result of the ingestion of the foods through the breast milk. Experimental evidence is entirely against inherited sensitization through the father. Colic, vomiting, diarrhea, repeated respiratory infections, milk crust, seborrhea and eczema in breast fed babies, are often the result of allergic reactions to foods coming to the infant through the breast milk. In the cutaneous test on infants the erythematous reaction is more common than the wheal and therefore more important. Sensitization often is multiple and may be to a majority of the foods in the mother's dietary. Shannon suggests that the repeated exacer-

bations of eczema in breast fed babies may be due to newly acquired sensitization to foods the mother eats. The manifestations of exudative diathesis in nursing infants are the result of anaphylactic reactions to food proteins in the mother's dietary, and not a result of fat intolerance, in the majority of cases.

Spasmophilic Diathesis in Older Children.—While the chemistry of the blood in the spasmophilic diathesis may not reveal great changes in the calcium content, Scherer says there is a hyperexcitability of the nervous system which can be shown by the electrical reactions. The condition is relieved by the use of liberal doses of calcium, 6 gm. in twenty-four hours combined with cod liver oil, 8 c.c., twice daily. Increased electrical reactions were noted in six cases. These six children were brought in for examination because of extreme restlessness, peevishness, anorexia and disturbed sleep. Physical examination in all except two cases showed a normal child.

Differential Diagnosis of Gastric Ulcer and Cancer.—Willson states that in a large majority of stomach cases, by the time the symptoms appear the different elements that go to make a diagnosis are, in order of their relative value: Roentgen rays; history; physical examination; gastric analysis; stool analysis; other laboratory findings (blood, etc.).

Analysis of Epidemic of Paratyphoid.—In an epidemic of approximately 106 cases of paratyphoid fever among students, the clinical features were those of typhoid fever with variation in the occurrence of herpes about the lips in several cases, with unusually numerous and large rose spots, with comparatively sudden onset, with frequent profuse sweating, intermittent fever and often quite rapid lysis of fever. Complications were present in about 4 per cent. of the cases and the mortality rate was about 2 per cent. McKinlay is of the opinion that infection probably occurred through the contamination of bulk milk by carriers. Vaccination from one to three years previously did not confer immunity in the twenty individuals who had been previously inoculated with triple vaccine, or appreciably alter the course of the disease.

Dystocia Due to Ovarian Tumor.—Souba reports a case of multilocular cystadenoma of the ovary in a woman, aged 37, in which labor was impeded. The tumor was removed per vaginam immediately after the birth of the baby.

New Jersey Medical Society Journal, Orange

March, 1922, **19**, No. 3

Hay-Fever and Its Treatment with Glycerolated Pollen Antigen. R. O. Clock, Pearl River, N. Y.—p. 63.
Diagnosis of Diseases of Stomach. M. E. Rehfuss, Philadelphia.—p. 71.
Prevention of Mental Disease. A. Gordon, Philadelphia.—p. 75.
Monocular Exophthalmos. B. M. Howley, New Brunswick, N. J.—p. 77.

New York State Journal of Medicine, New York City

March, 1922, **22**, No. 3

Cervical Ribs: Surgical Treatment. A. S. Taylor, New York.—p. 97.
Cesarian Section. J. K. Quigley, Rochester, N. Y.—p. 108.
Bags Versus Expectancy in Dry Labor. F. A. Dorman, New York.—p. 113.
Superstitions in Obstetrics. S. B. Blakely, Binghamton, N. Y.—p. 117.
Radium Therapy of Cancer of Mouth and Throat. C. E. Field, New York.—p. 121.
Acute Tubotympanic Catarrh. C. C. Cott, Buffalo, N. Y.—p. 124.
Early Treatment of Congenital Syphilis. T. B. Givan, Brooklyn.—p. 127.
Continued Use of Digitalis. H. E. B. Pardee, New York.—p. 131.
Nitroxygenized Ether Vapor. A. F. Erdmann, Brooklyn.—p. 134.
Agitation for Free Choice of Physician in New York and What It Leads To. E. V. Delphey, New York.—p. 136.

Northwest Medicine Seattle

February, 1922, **21**, No. 2

*Treatment of Brachial Plexus Injuries. A. W. Adson, Rochester, Minn.—p. 33.
Some Newer Tendencies in Therapeutics. A. D. Hirschfelder, Minneapolis.—p. 39.
Health Supervision of School Children. C. P. Knight, Portland, Ore.—p. 44.
Problems of Modern Diabetic Treatment. N. W. Janney, Los Angeles.—p. 47.
Unity in Medical Curriculum. H. B. Torrey, Portland, Ore.—p. 49.
Some Considerations of Cleft Surgical Technic. J. A. Pettit, Portland, Ore.—p. 52.
Remarks on Urology and Syphilis. J. G. Strohm, Portland, Ore.—p. 55.

Treatment of Brachial Plexus Injuries.—Forty-five patients suffering from birth palsy and fifty-six patients suffering from brachial paralysis due to injuries other than at the time of birth are the basis of Adson's paper. In the series than 2 years of age had a shoulder dislocation; five of the of forty-five birth palsies, only one of fourteen patients less ten patients between the ages of 2 and 5, and twelve of the twenty-one patients over 5 had dislocations. A review of the fifty-six palsies due to brachial plexus injuries shows: result of trauma to the shoulder and neck without fracture or dislocation (fourteen treated medically, nine operated on), twenty-three cases; result of trauma to the shoulder and neck associated with fracture of the clavicle or humerus (two treated medically, five operated on), seven cases; associated with dislocation of the clavicle or humerus, treated medically, five cases; result of belt injuries (seven treated medically, six operated on), thirteen cases; result of gunshot wounds (four treated medically, three operated on), seven cases; result of stab wounds (operated on), one case. In two of the patients the upper trunk was involved, in three the middle trunk, in one the lower trunk, in nine the upper and middle trunks, in three the middle and lower trunks, and in thirty-eight the entire plexus, either partial or complete. The injury was on the right side in thirty-three and on the left in twenty-three. Fourteen of the twenty-five operations were failures; eleven patients were improved to approximately 40 per cent. function. In fourteen patients with injuries the result of trauma to the shoulder and neck without fracture or dislocation, who were not operated on, there was an average of 45 per cent. of function. Thirty-two patients were not operated on; four failed to obtain function. No information was obtained from two, and twenty-six had approximately 45 per cent. return of function. Twenty-four patients were operated on; fourteen of these did not obtain return of function; ten had approximately 34 per cent. return. Failure resulted in 12 per cent. of the patients not operated on, and in 58 per cent. of those operated on. The data obtained reveal that the milder cases improve without interference, and that surgery offers but little in any of the brachial plexus injuries due to the type and position of the injury, except in cases of gunshot and stab wounds in which surgery is of great value.

Oklahoma State Medical Association Journal, Muskogee

January, 1922, **15**, No. 1

Syphilis in Newborn. R. M. Anderson and E. L. Yeakel, Shawnee.—p. 1.
Modern Method of Treating Syphilis in Infancy. C. V. Rice, Muskogee.—p. 5.
Child-Bearing Period. J. A. Hatchett, El Reno.—p. 7.
*Rare Complication of Measles: Bullous Eruption. J. R. Burdick, Tulsa.—p. 12.
Toxemia of Pregnancy. W. A. Fowler, Oklahoma City.—p. 15.

Bullous Eruption in Measles.—Burdick's patients were twins, aged 10 months. One child developed a bullous eruption on the fifth day, the other on the fourth day. The bullae were of large size (goose egg) and filled with fluid resembling the vesicle of a severe burn. The fluid at first was perfectly clear but later became cloudy. Microscopic examination showed many pus cells and some organisms in the smears. The measles rash was plainly seen between the bullae, which were fast increasing in number and size; marked congestion of the eyes, Kopliks, spots and a cough were noticed. At the end of the second day pieces of skin, 2 and 3 inches in size, commenced to roll up and peel off from the chest, back, face, abdomen and legs. The arms were the least involved. There was no involvement beyond the junction of the skin and mucous membrane. The eyelids, lips, nose and habia were very much swollen with loss of all the epidermis over and around them.

Pennsylvania Medical Journal, Harrisburg

March, 1922, **25**, No. 6

Treatment of Diabetes by General Practitioner. E. P. Joslin, Boston.—p. 373.
Ophthalmologist's Standpoint. E. A. Weisser, Pittsburgh.—p. 381.
Chemical Procedures of Use in Control of Diabetes. R. R. Snowden, Pittsburgh.—p. 383.
Diagnosis of Portal Cirrhosis. Report of Case. A. J. Simpson, Chester.—p. 389.

Nonsurgical Gall Tract Drainage As Aid to Surgeon. B. B. V. Lyon, Philadelphia.—p. 392.
Foundations of Disease and Their Practical Applications. R. Pemberton, Philadelphia.—p. 401.
History of Northern Medical Association. D. Riesman, Philadelphia.—p. 408.
Superstitions, Fallacies and Facts of Ancient Medicine. F. C. Knowles, Philadelphia.—p. 411.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

February, 1922, **26**, No. 9

Assemblage of Apparatus for Purpose of Exciting New Model Coolidge Tube in Oil at 200,000 Volts. F. Hernaman-Johnson.—p. 273.
Spectrometer Contrived for Purposes of Practical Radiology. A. March, K. Staunig and O. Fritz.—p. 285.
Regulation of Vacuum of Modern Therapeutic Roentgen-Ray Tubes. C. Andrews.—p. 293.

British Medical Journal, London

March 4, 1922, **1**, No. 3192

*Toxemias of Pregnancy. A. L. McIlroy.—p. 335.
*Tuberculosis in Wales. S. L. Cummins.—p. 338.
"Buffering" of Blood. A. V. Hill.—p. 340.
*End Results of Removal of Tonsils and Adenoids. H. S. Sington.—p. 341.
*After Results of Twenty-One Cases of Ileocolostomy Performed for Tuberculous Bones and Joint Diseases. H. Drummond.—p. 342.
Function of Chromaphil Tissues in Relation to Splanchnic Stimulation. A. W. Sheen and S. Vincent.—p. 343.
Relation of Corpus Luteum to Menstruation and Pregnancy. W. R. MacKenzie.—p. 343.
Mucocele of Frontal Sinus. J. Acomb.—p. 344.
Amebic Liver Abscess. L. Rogers.—p. 345.
Exophthalmic Goiter in Congenital Syphilis. N. F. Rowatron.—p. 347.
Pneumococcal Peritonitis Simulating Acute Gangrenous Appendicitis. J. F. Rey.—p. 347.
Intestinal Obstruction Due to Paralytic Ileus. C. L. G. Chapman.—p. 347.

Toxemias of Pregnancy a Public Health Problem.—McIlroy stresses the point that the main number of severe cases are preventable if treatment can be given in their early stages. Every pregnant woman should be kept under medical observation, and every case of albuminuria should be investigated. Every premature birth should be notified, no matter what period of pregnancy, and facilities should be given for examination of the ovum. The public health authorities should take up the question of toxemia of pregnancy just as they have taken up the question of syphilis. Antenatal beds should be provided in all maternity hospitals. Financial facilities should be given to research workers, especially in the domain of physiology, for the investigation of the normal function of human pregnancy.

Tuberculosis in Wales.—The tuberculosis of Wales, Cummins says, differs from that of England in certain well defined characters: The mortality rate is, on the whole, higher. The highest mortality, relatively to the numbers of the population, occurs not in the crowded town areas, but in the sparsely populated mountainous districts. The mortality tends to the "young adult type." Although the mortality is high among the population in general, it is less among infants and young children than in England. The clinical type in Wales appears to be more acute than in England. In those parts of Wales where the mortality is highest it does not show, as in England, a close correlation with the mortality from all causes, but outstrips this in a very marked degree, showing that some other factor or factors than faulty hygiene must be at work. The hypothesis advanced by Cummins is that where human beings are scattered and isolated, the passing of germs from one person to another is more or less restricted, except within the home. Where, on the other hand, human beings are herded together and constantly associated one with another, the germs carried by each are passed on indifferently. But the number of germs so passed on may be, and probably is, relatively small in most cases, except in infected houses. In these circumstances, in crowded communities, there should be in almost every individual some degree of infection with the tubercle bacillus. In the majority the degree of infection should be small, leading to the acquisition of a relative immunity rather than to active disease. The inhabitants of a large city must adapt himself to the bacteria that are so numerous in his surroundings in order that he may live at all. Therein, perhaps, lies the danger to those who quit the sparsely populated areas to seek the higher pay and the more attractive life of densely crowded towns. All these facts seem to point to the importance of varying degrees of acquired resistance as the essential factors underlying the differences between the tuberculosis of Wales and elsewhere. If these factors are, indeed, the fundamental ones, if Nature is gradually getting rid of tuberculosis, by a process of unconscious vaccination, then efforts at prevention should be directed to the discovery of a safe and efficient vaccine.

End Results of Tonsillectomy.—In twenty-four of fifty-two cases investigated by Sington, no further attendance was needed. In five cases, attendances were required for gastric or intestinal disorders only; in four cases, for congenital deformity; in four cases for zymotic diseases; in two cases, for appendicitis; and in ten cases for other disturbances unconnected with the throat. In only three cases—asthma, congenital heart, and bronchitis—was attendance after the operation for removal of tonsils and adenoids at all frequent, and in these instances it was very much reduced.

End Results of Ileocolostomy Done for Bone Tuberculosis.—Of the twenty-one patients operated on, three are known to be alive at the present time; one, with hip disease, is cured, while the remaining two are greatly improved. Five patients cannot be traced up to date; two of these were known to be well and healed two years after operation; the remaining three were not cured when last seen, eighteen months, twelve months, and three months, respectively, after the operation. Three died from intestinal obstruction following the operation, one on the fourth day, one on the eighth day, and one on the nineteenth day. In all three cases the diagnosis of intestinal obstruction was made early and operation was performed at once, but the serious general condition of the patients interfered with recovery. A boy with a discharging left hip joint was no better as the result of the operation, and succumbed to amputation at the hip joint thirteen months later. The remaining nine patients when traced were found to be dead as the result of tuberculosis either from the primary focus or from meningitis. They lived for periods varying from one to five years after the operation.

Edinburgh Medical Journal

February, 1922, **28**, No. 2

Asthma: Pathology and Treatment. J. J. G. Brown.—p. 54.
Cesarean Section: Indications and Technic. J. W. Ballantyne.—p. 74.
Diagnosis and Prognosis in Kidney Cases by Tests for Renal Function. J. D. Comrie.—p. 34.
Pneumoperitoneum of Pelvis as an Aid to Gynecologic Diagnosis. R. L. Impey.—p. 21.

Japan Medical World, Tokyo

February, 1922, **2**, No. 2

*Experimental Studies on Measles. R. Kawamura.—p. 31.
Early Diagnosis of Pulmonary Tuberculosis by Roentgen Rays. T. Miyahaha.—p. 35.
Cause and Treatment of Pleural Infection Following Operations on Pleural Cavity. H. Iijima.—p. 40.

Experimental Studies in Measles.—With blood taken sixty hours before the appearance of the eruption and only a few hours after the onset of fever of a measles patient, Kawamura was able to produce typical measles in monkeys by subcutaneous injection. For three generations positive results were obtained in monkeys, but experiments with rabbits and guinea-pigs were chiefly negative. The animals had a certain definite incubation period (from seven to nine days), with a slight fever, conjunctivitis, rhinitis, roseolar papular eruptions, Koplik's spots and leukopenia. Leukopenia occurred before the appearances of the eruption and the first stage of the febrile condition. There was no leukocytosis at any time. There was an increased number of neutrophils and decreased lymphocytes, and no marked changes in the other types. Histologically, in the corium there was marked increase of large mononuclear lymphocytes, and in the epithelium necrosis, vesicular swellings, cystic formations and parakeratosis were noticed. The leukocyte pictures and eruptions resemble very much tsutsugamushi disease.

Journal of Neurology and Psychopathology, Bristol

February, 1922, **2**, No. 8

Nature of Mental Deficiency. A. F. Tredgold.—p. 311.
*Comparative Study of Three Colloidal Reactions on Cerebrospinal Fluid. D. O. Riddel and R. M. Stewart.—p. 325.
*Phylogenetic Significance of Plantar Response in Man. G. de M. Rudolf.—p. 337.
*Iridocyclitis—Parotitis—Polyneuritis: New Clinical Syndrome. A. Feiling and G. Viner.—p. 353.

Result of Three Colloidal Reactions on Spinal Fluid.—In a comparative study made by Riddel and Stewart of spinal fluids in thirty cases of general paralysis the colloidal gold test and the colloidal benzoin reaction of Guillain, Laroche and Lechelle gave parallel results; the gum mastic reaction was in less close agreement. The colloidal gold and the gum mastic tests gave paretic curves in nonparetic fluids. The colloidal benzoin test gave paretic curves only in paretic fluids. Syphilitic curves were obtained in all three tests in cases that clinically were not examples of neurosyphilis. In the colloidal benzoin reaction a slight degree of precipitation in the middle series of tubes was often obtained with normal cerebrospinal fluid.

Phylogenetic Significance of Plantar Response.—The investigations made by Rudolf show that there is a flexor plantar response of a primitive character that occurs in the lower animals, in the majority of very young human infants (the infantile flexor response) and in certain cases of total transection of the adult human cord. The primitive flexor plantar response changes to an extensor response as development proceeds, either as the animal scale is ascended or as the child grows older, or as the spinal cord readapts itself to its altered conditions after transection. The extensor plantar response changes to a flexor plantar response in animals higher than the anthropoid apes, i. e., in man. Thus there is a succession of flexor, extensor, flexor, or F. E. F., responses both in the phylogeny of the race and in the ontogeny of the individual. In the case of total transection of the cord in man, the final adult flexor plantar response is not obtained. The theory that the alteration of the plantar response from extensor to flexor is due to the myelination of the pyramidal tracts is apparently incorrect; more probably it is due to the myelination of the peripheral nerves, which occurs at the eighth month of life. The hypothesis that the extensor plantar response of infants and of "spinal" man is an atavistic phenomenon dependent on the prehensile toe of our arboreal ancestors is not shown by these investigations to be incorrect. The normal adult flexor plantar response is due to the control of the brain over the lower centers of the cord, and this control is exercised only by the brain in its most highly developed form, i. e., the brain of man.

Iridocyclitis-Parotitis-Polyneuritis.—The syndrome described by Feiling and Viner consists of iridocyclitis and parotitis, with or without involvement of either cranial or peripheral nerves, and occasionally accompanied by cutaneous lesions. Whether this syndrome is produced by any specific infection or may occur as the result of several different infective agents is an open question. In the case cited no definite infective agent could be isolated.

Journal of State Medicine, London

February, 1922, **30**, No. 2

Do We Neglect the Industrial Skin Sufferer? E. P. White.—p. 47.
The Problem of the Working Mother. A. L. McIlroy.—p. 60.
*Biologic Characters of Leptospira Icterohemorrhagiæ. A. S. Griffith.—p. 70.

Biologic Characters of Leptospira Icterohemorrhagiae.—Semigelatinous bovine serum, to which had been added a small quantity of fresh citrated blood of a normal guinea-pig was used by Griffith for the routine cultivation of the spirochete. Virulence tests have been made on the guinea-pig and rat only. Guinea-pigs may sometimes possess a very high degree of natural immunity to the disease. The rate is resistant to the inoculation of spirochetes which are highly virulent to guinea-pigs. The spirochetes are not, however, all destroyed in the body of the rat, but some may pass into the kidneys where they live and multiply, and from which they are excreted with the urine intermittently. The long persistence of the spirochete in the kidneys of a rat may provide a simple and inexpensive means of preserving a virulent strain for laboratory purposes. Young recently isolated cultures of the spirochete are pathogenic for guinea-pigs and produce in them the same type of disease as tissue spirochetes. The virulence of the cultivated spirochete is, however, soon lost. None of the guinea-pigs inoculated developed spirochetosis. The preparation of a therapeutic antispirochetal serum is also discussed by Griffith.

Journal of Tropical Medicine and Hygiene, London

Feb. 15, 1922, **25**, No. 4

Care and Treatment of Ear in Tropics. W. S. Sharpe.—p. 37.
*Detection and Identification of Maltose, Galactose, Saccharose and Inulin by Mycologic Method. A. Castellani and F. E. Taylor.—p. 41.

Detection of Maltose by Mycologic Method.—Castellani and Taylor state that the simplest way of carrying out the method to determine whether a substance is or is not a certain carbohydrate, is to test on the substance whenever possible the action of two germs known to be identical in all their fermentative reactions except on that particular carbohydrate. For instance, in order to see whether a given chemical substance is maltose, the substance may be tested with two organisms identical in all their biochemical reactions except their action on maltose, one fermenting it, the other not.

Lancet, London

March 4, 1922, **1**, No. 5140

*Nerve Supply of Parietal Peritoneum and Subperitoneal Tissues. V. Z. Cope.—p. 415.
Duodenal Regurgitation into Stomach During Gastric Digestion. C. Bolton and G. W. Goodhart.—p. 420.
*Infantile Mortalities of Rich and Poor. D. Forbes.—p. 426.
Shortening of Postoperative Convalescence: Differences Between British and Continental Treatment. H. E. Claremont.—p. 427.
Twilight Sleep: Seventy-Five Cases. H. M. Gerson.—p. 428.
Femoral Hernia of Unusual Size. G. Keynes.—p. 429.
Case of Abdominal Pregnancy. W. G. Nash.—p. 429.
Cesarean Section in Falkland Islands. F. G. W. Deane.—p. 430.

Nerve Supply of Parietal Peritoneum.—The clinical application of knowledge of the nerve supply of the parietal peritoneum, Cope says, depends on the various ways in which irritation of the nerve terminals may be made known. The manifestations depend partly on the nature of the irritant. The local pain due to parietal irritation varies in amount and diagnostic value according to the part affected. When the subperitoneal tissue lying over a muscle becomes edematous and irritated, movement of the subjacent muscle causes local pain. Under certain conditions pain results from abnormal states of the viscera. No referred pain of any localizing value is ever furnished by the nondemonstrative areas. That part of the abdominal lining in which diagnosis is most aided by referred pain is the diaphragmatic area. Pain is referred to the right shoulder from the under surface of the right side of the diaphragm, and similarly from the left side to the left shoulder. The maximum site of pain when the dome is irritated is the acromioclavicular joint. If ain is felt equally on top of both shoulders a median irritation is presented. Cope points out that when a patient comes to the surgeon with symptoms of intestinal obstruction an almost painless femoral hernia often proves to be the source of the trouble. In such cases there is referred pain in the abdomen, but the local pain, though present, is so slight as to be overlooked by the patient. If a complete coil of intestine be present in the sac there may be greater tenderness, but if only a knuckle of intestine or omentum there may be little or insignificant pain.

Infant Mortality Among Rich and Poor.—Forbes states that the chances of survival of the newly born infant are not materially influenced by the social and sanitary conditions under which the mother lives during pregnancy, and given equally favorable surroundings the infants of the various classes have equal chances of survival after birth. The mortality among the infants of the rich in the first year of life is less than one half of the mortality among the infants of the very poor. The fall in infantile mortality from diarrhea is likely to continue. In the poorest it is seven times greater than in the well to do. The infantile mortality rate from bronchitis and pneumonia is five times as great in the poorest as in the well to do.

Medical Journal of Australia, Sydney

Jan. 21, 1922, **1**, No. 3

Roentgen-Ray Link Between Medicine and Dentistry. D. Smith.—p. 57.
*Induction of Labor Versus Cesarean Section. A. Sherwin.—p. 59.
Survey of Effect of Venereal Disease Legislation in Western Australia for Period of Five Years. R. C. E. Atkinson.—p. 65.
Radical Abdomino-Perineal Operation for Cancer of Cervix and Vagino-Rectal Septum. H. H. Schlink.—p. 67.
*Case of Spontaneous Rupture of Heart. G. A. Birnie.—p. 68.

Jan. 28, 1922, **1**, No. 4

Prophylaxis of Venereal Diseases. P. Fianchi.—p. 85.
Prophylaxis in Venereal Diseases. L. E. Ellis.—p. 93.
Failure of Tartar Emetic in Treatment of Two Cases of Hydatid Disease. N. H. Fairley.—p. 94.
Two Cases of Placenta Praevia. J. L. T. Isbister.—p. 96.
Four Cases of Amebic Dysentery. H. C. Colville.—p. 96.

Induction of Labor Versus Cesarean Section.—Sherwin is an ardent advocate of induction of labor as against cesarean section. He says that induction of premature labor in selected cases must appeal strongly to the thinking obstetrician, firstly on account of the simplicity of its performance and its undeniably satisfactory results to mother and child and secondly on account of the active mental exertion and patient observation necessitated in determining the precise moment for its performance. This very reason, unfortunately, would tend to make it unpopular with the overworked general practitioner, coupled with a natural timidity that inopportune interference might prove disastrous to his patient and so bring discredit on himself. To such, cesarean section, which can readily be performed by any one possessing ordinary operative ability, enhanced by the theatrical glamor which still surrounds the operation, appears the far easier method of dealing with a complicated labor.

Spontaneous Rupture of Heart.—Birnie reports the case of a woman, aged 74, who for a week had not been feeling well, but on the previous day had been able to walk about. For no apparent reason she had remained in bed on the day of the attack, and at 3 p. m. had sat up suddenly, had called out loudly and had immediately fallen back apparently unconscious. This attack lasted only a few moments and was followed by severe pain and vomiting, and a little later the bowels acted into the bed. The heart sounds were feeble, but regular in rhythm, the rate being 84. Percussion showed no evidence of increased cardiac dulness. The lungs were clear. Nothing abnormal could be detected in the abdomen. With stimulation, the pulse gradually returned, at first feeble and regular, but later became completely irregular. This continued for about half an hour, when the pulse suddenly became regular again. The apex beat was in the nipple line. At intervals she sat up and retched violently; throughout the pain was apparently intense. She died five hours later. A postmortem examination disclosed the pericardium full of blood. The weight of the heart was 255 gm. It contained some patchy fibroid areas. Both coronary orifices were partially occluded by atheroma. The coronary arteries were calcified. On the anterior wall of the left ventricle, 1.25 cm. from the interventricular septum and 3.2 cm. from the apex, there was a perforation about 1.25 cm. long. The endocardial aspect showed a large, ragged, perforated area covered by an adherent, fairly recent antemortem clot, channelled through the center. The heart muscle in the neighborhood of the rupture showed old fibrosis and muscle atrophy, with great thinning of the wall. An organizing antemortem thrombus was attached to the site of the rupture, suggesting a preliminary splitting of the endocardium, followed later on by a rupture through the organizing clot and the overlying thinned heart wall.

Practitioner, London

February, 1922, **108**, No. 2

Aortic Regurgitation. S. Russell-Wells.—p. 77.
Clinical Aspect of Hypertension. L. T. Thorne.—p. 102.
*Negligible Glycosuria. O. Leyton.—p. 113.
Milestones in Refraction Work. E. Clarke.—p. 119.
Glaucoma (Simple Chronic). H. Smith.—p. 131.
Acute Abdominal Conditions. L. Bromley.—p. 137.
Prevention of Venereal Diseases. M. W. Browdy.—p. 144.

Negligible Glycosuria.—The average quantity of dextrose in the urine of healthy people is about 0.02 per cent. A comparatively small number of healthy human beings excrete about 0.5 per cent. of dextrose in their urine; this may be considered either a fault in their metabolism, similar to alkaptonuria and cystinuria, or a fault in their structure, like webbed fingers and harelip. To these cases Leyton applies the term negligible glycosuria which has the advantage of describing the complaint, although it does not refer to any pathologic cause, but since the pathologic cause is unknown, perhaps this is no disadvantage. The peculiarity of the disease is that the individual passes a urine which contains from 0.1 to 1.0 per cent. dextrose, the percentage varying in different cases, but usually being fairly constant in the same individual. Neither the quality nor quantity of the food taken makes any appreciable difference to the percentage of sugar in the urine excreted, in the majority of cases. Negligible glycosuria is not associated with any symptoms whatever, and, therefore, the condition is discovered when a routine examination is being conducted for life insurance or some other cause. The recognition of the condition is important not only in order to prevent healthy individuals from being treated as diabetics, but also to meet the argument occasionally raised by true diabetics when they are beginning to forget the benefits derived from correct treatment. Leyton has during the last two years examined eighteen persons who had negligible glycosuria; several of them had been treated for diabetes mellitus. Three cases are in the same family.

Archives Médicales Belges, Liége

September, 1921, **74**, No. 9

*Chronic Intestinal Stasis. V. Pauchet.—p. 801.
Mental Tests of the Insane, Idiots and Imbeciles. H. Hoven.—p. 814.
Examination in Angina Pectoris. Danzin.—p. 833.

October, 1921, **74**, No. 10

Extraction of Foreign Bodies from the Esophagus and Upper Air Passages. E. Henrard.—p. 897.
Serodiagnosis of Tuberculosis by Complement Fixation. G. Ichok.—p. 908.
Training in Mathematics Required for General Chemistry and Alimentary Chemistry. H. Dackweiler.—p. 924.

Chronic Intestinal Stasis.—A somewhat similar article by Pauchet was summarized in THE JOURNAL, April 1, p. 1008.

Archives de Médecine et de Pharm. Militaires, Paris

November, 1921, **76**, No. 5

Ictero-Hemorrhagic Spirochetosis. de Vezeau de Lavergne.—p. 353.
Three Cases of Leprosy in a Senegalese Regiment. Laporte.—p. 373.
Leprosy in a Chinese Workman in France. P. Bièrer.—p. 379.
Weil-Félix Test Reaction in Typhus. Laporte.—p. 382.

Bulletin de l'Académie de Médecine, Paris

Feb. 14, 1922, **87**, No. 7

*Mothers' Home. Bosc.—p. 193.
Typhoid in 1921 at Tenon Hospital. P. Emile-Weil.—p. 196.
*Roentgen Treatment of Blood Producing Organs in Pulmonary Tuberculosis. F. Trémolières and P. Colombier.—p. 198.
Primary Cancer in Pleura. A. Rémond and Minvielle.—p. 204.
Juvenile Osteo-Arthritis. J. Silbol.—p. 206.

Maternal Home.—Bosc describes the workings of the annex to the Maternity at Tours which provides a home for nursing women and gives them a daily stipend of 1.25 francs. This sum is doubled if they will suckle another child also. These *maisons maternelles* are being inaugurated in different cities, and are doing a fine work. At the Tours institution there has been no death among the forty-six children, and only one child has been abandoned by its mother. The woman thus has a home as long as she wishes while she is nursing the children in whole or in part. His communication was referred to a committee for discussion of ways and means to have every maternity thus supplemented with a mothers' home.

Radiotherapy in Pulmonary Tuberculosis. — Trémolières and Colombier have been applying the roentgen rays to stimulate the functioning of the blood-producing organs as an aid to the defensive forces in pulmonary tuberculosis. Five cases are described in detail of the total twenty-three thus treated. All were in an advanced stage of the disease, rebellious to sanatorium treatment, and mostly with cavities. All have been decidedly improved. The spleen, sternum and long bones were the regions exposed, and the results justify,

they think, further application of this indirect radiotherapy of tuberculosis. Patients able to rest or do only light work seemed to do better than those who had to keep at hard work.

Bulletins de la Société Médicale des Hôpitaux, Paris

Jan. 20, 1922, **46**, No. 2

*Familial Little's Disease. H. Roger and Smadja.—p. 72.
Imported Kala-Azar at Paris. Klippel and Monier-Vinard.—p. 76.
*Myelitis in Adults. G. Etienne, A. Stroup and J. Benech.—p. 86.
Relations Between Syphilis and Diabetes. Villaret and Blum.—p. 90.
*Primary Acute Plague Edema. G. Delamare.—p. 94.
Diaphragmatic Eventration. A. Louste and E. Fatou.—p. 98.
*Malaria with Addison's Disease. A. Chauffard, Huber and Clément.—p. 117.
Aneurysm of Right Carotid in Man. Pinard and Mendelsohn.—p. 125.
Polyneuritis After Bacillary Dysentery. Coyon and Debray.—p. 129.

Little's Disease in Two Sisters.—The children are 10 and 7 years old, and the symptoms indicate predominance of the spinal cord. There are signs of inherited syphilis, and the father has a positive Wassermann reaction.

Serotherapy of Myelitis in Adults.—Three new cases are reported of the cure of acute myelitis in adults under anti-poliomyelitis serum. In one the paraplegia had developed suddenly the third day of an infectious sore throat. The paralysis of the legs was total, and the arms showed slight paresis. The serotherapy was begun the fourth day of the paralysis, and by the fourteenth all the symptoms had retrogressed under it in the first case. The myelitis was more diffuse in the other cases, and the antiserum was not given till the ninth week, but the man of 40 was able to get up and walk the tenth day.

Primary Acute Plague Edema.—The sailor, 45 years old, presented a primary, acute, serohemorrhagic and diffuse edema of the subcutaneous tissue as the only manifestation—except for a small focus of congestion at the base of the right lung—of bubonic plague. He died the eightieth hour, before any buboes had developed.

Chronic Malaria.—The malaria was contracted during military service in the Near East, and it had been supposedly cured by eighteen months of quinin treatment. The malaria roused again when the quinin was suspended, and symptoms of Addison's disease became superposed on the malarial paroxysms, with also unilateral atrophy of the optic nerve and peripheral polyneuritis. Inflation of the suprarenal region by the Carelli method revealed atrophy of the left suprarenal, and adhesions around it. Great improvement has been realized under quinin and arsenicals, but suprarenal treatment has not shown much benefit.

Journal de Médecine de Bordeaux

Feb. 25, 1922, **94**, No. 4

Pathogenesis and Treatment of Edema. P. Mauriac.—p. 103.
Bactericidal Action of Certain Alcoholic Appetizers. B. Auché and M. Jobard.—p. 106.
Gastrectomy for Midgastric Cancer. Charrier and Princeteau.—p. 107.
Malaria and Tuberculosis. L. Verdelet.—p. 110.
Recurring Urticaria Traced to Wool Mattress. R. Damade.—p. 111.

Journal de Radiologie, Paris

February, 1922, **6**, No. 2

Roentgen Ray Examination of Tumors in the Left Hypochondrium. L. Mallet and R. Coliez.—p. 57.
Fracture of Head of Radius. L. J. Colaneri and Delay.—p. 68.
Diagnosis of Diverticulum in Duodenum. R. Freisly.—p. 69.
*Pleural Suppuration from Foreign Body. Chauviré.—p. 74.
Roentgen Ray Observation of Volvulus of the Stomach. A. Rosselet and R. Gilbert.—p. 76.
Radium Applicator for Gastric Cancer. A. Jentzer.—p. 81.

Pleural Suppuration from Foreign Body in Thorax.—The foreign body in the case described was a drain tube left from a previous intervention a year before. Roentgenoscopy first explained the persisting pleural suppuration during all these months. The black rubber tube was 8 cm. long.

Journal d'Urologie, Paris

December, 1921, **12**, No. 6

Phthalein Tests of Kidney Functioning. G. V. Tardo.—p. 393.
Extraprostatitis of Urethral Origin. Aversenq.—p. 413.
Rupture of Varicose Vein in Bladder. G. Marion.—p. 417.
Ureometer for the Urinosecretory Constant (Ambard Index). L. Ferria.—p. 419.

Néoplasmes, Paris

Jan. 15, 1922, **1**, No. 1

*The Erythrocytes in Cancerous Blood. A. Robin.—p. 5.
Comparative Value of Roentgenotherapy, Radium Therapy and Surgery in Treatment of Cancer of the Tongue. P. Delbet.—p. 17.

The Erythrocytes in the Course of Malignant Tumors.—Robin reviews what various writers have contributed to this subject, as well as the results of his own research. The great variety of findings and the fluctuations in the individual case are striking. Nothing characteristic of cancer or any type of cancer seems to have been discovered.

Presse Médicale, Paris

Nov. 5, 1921, **29**, No. 89

Fixation of Complement in Tuberculosis. Rieux and Zoeller.—p. 881.
Arsenicals and Serotherapy in Gangrene of Lung. L. Cheinisse.—p. 886.

Feb. 11, 1922, **30**, No. 12

*Action of Radium on Uterine Cancer. M. Letulle.—p. 121.
Respiratory Changes in Blood Pressure. Constantin and Soula.—p. 123.
*Arsphenamin Treatment of Syphilis. M. Pomaret.—p. 124.
Latest Literature on Quinidin in Heart Disease. L. Cheinisse.—p. 126.

Action of Radium on Uterine Cancer.—Letulle gives photomicrograms of the uterus removed in a number of cases after a course of radium treatment. A fibrinoid necrosis of the vessels is a constant finding.

Arsphenamin by Intramuscular Injection.—Pomaret reports the experimental, chemical and other bases for his conviction that the intramuscular route is the preferable one for administration of the arsenicals in syphilis.

Feb. 15, 1922, **30**, No. 13

*Roentgenography of the Kidney. Delherm and Laquerrière.—p. 133.
Bismuth Stomatitis. R. Azoulay.—p. 134.
*Pathology of the Parotids. Marthe Erlich.—p. 138.

Injection of Gas to Outline the Kidney.—Delherm and Laquerrière applied the Carelli-Sordelli method of inflation of the bed of the kidney with oxygen or carbon dioxid, and state that their experience with forty cases has been free from any serious by-effects, while the radiographic findings have been rendered amazingly instructive. Their article is illustrated and the technic described. (Compare with editorial in THE JOURNAL, Oct. 1, 1921, p. 1108.)

Pathology of the Parotids.—Erlich writes from Warsaw that the parotids were distinctly enlarged in 25 per cent. of 1,576 children examined. The proportion showing this hypertrophy of the parotids was largest between the ages of 2 and 6. Only a very few of these children had ever had mumps. She suggests that privations in diet may be a factor in this pathology of the parotids, and urges that the parotids of animals with deficiency diseases should be investigated.

Progrès Médical, Paris

Feb. 4, 1922, **37**, No. 5

*Functioning of Ovaries During Gestation. H. Vignes.—p. 49.
Tumors of the Pituitary Gland. Lereboullet.—p. 52.
Cellulitis and Neuralgia. Wetterwald.—p. 55.
Differential Diagnosis and Treatment of Acute Delirium and Delirium Tremens. H. Damaye.—p. 57.

Functioning of Ovaries During Gestation.—Vignes has devoted two years of clinical and experimental research to the functioning of the ovaries during gestation. He believes that the rôle of the ovary is not devolved on any of its particular elements; and that it is absurd to base theories on the activity of the interstitial or other cellular elements. He says that there are two kinds of elements in the ovary: the ovum, and what he terms the *agent de liaison* between the ovum and the organism. The ovum seems to secrete a very active substance that he calls *substance x*, of the nature of which we have no knowledge. The cells of the ovary are the support of the ovum; they give it assistance and can, by reversive action, protect the organism against its activity. The *x* substance is absorbed by the lipoids in the lutein cells and forms a complex acting on physiologic functions. In case of pathologic overproduction of the *x* substance, there is more production of lutein cells. The hyperluteinism thus is the consequence of excessive ovarian functioning, and not

its essence. He then summarizes the different modifications undergone by the ovaries during gestation.

Revue Franç. de Gynécologie et d'Obstét., Paris

December, 1921, **16**, No. 12

*Jaundice in the New-Born. F. A. Deluca.—p. 641.
Organotherapy in Fowls. C. Ouy-Vernazobres.—p. 645.
*Hysterectomy for Fibroma Entailing Abortion. A. Grosse.—p. 658.
Place of Pituitary Extract in Obstetrics. L. M. Pierra.—p. 661.

Jaundice in the New-Born.—Deluca's discovery of laceration of the dura mater or meningeal hemorrhage in 36 per cent. of 554 infant cadavers has already been summarized in these columns, March 11, 1922, p. 766. The disintegration of the extravasated blood explains the jaundice. In five cases reported, this cause for the icterus neonatorum was beyond question. The jaundice in such cases is merely a sign, a symptom of the meningeal hemorrhage. The latter is more likely to occur with protracted labor, instrumental delivery and in cases of syphilis.

Fibroma Interfering with Pregnancy.—The large fibroma had entailed nonreducible retroversion of the uterus, and this had led to abortion. Grosse's subtotal hysterectomy probably warded off serious complications as the 4 months' fetus was found profoundly infected.

Schweizerische medizinische Wochenschrift, Basel

Feb. 23, 1922, **52**, No. 8

Mechanism of Genital Prolapse. H. Meyer-Rüegg.—p. 189.
Rectal Examination in Obstetrics. A. Labhardt.—p. 193.
Present Status of Vitamin Question. E. Rothlin.—p. 195. Conc'n in No. 9.
Hydatidiform Mole Before the Menopause. E. Frey.—p. 201.
Amyloid Tumors of the Mesentery. M. Ecoffey.—p. 202.

Archivio Italiano di Chirurgia, Bologna

December, 1921, **4**, No. 6

*Vicious Circle After Gastro-Enterostomy. G. Razzaboni.—p. 553.
Emphysema After Lesions of Thorax. C. Gamberini.—p. 643.
Case of Volvulus of Stomach. D. Giorgacopulo.—p. 660.
Fracture of Odontoid Process of Axis without Symptoms from Spinal Cord. G. Pieri.—p. 669.
Autoplastic Correction of Relics of Membranous Pericolitis. F. Nassetti.—p. 685.

The Vicious Circle After Gastro-Enterostomy.—Razzaboni's critical, clinical and experimental study of the acute vicious circle fills nearly 100 pages, including nearly twenty pages of bibliography. The practical deductions emphasize the gravity of the disturbances resulting from the vicious circle. Although improved technic has rendered it much rarer than of yore, it still happens occasionally, even when no cause for it can be discovered. Once installed, and rebellious to change of position and the stomach tube, the only relief is from a new operation, and for this a supplementary anastomosis, with or without gastrostomy, or a new gastro-enterostomy or a plastic operation on the stomach according to Kraske should be considered. Early intervention is the only means to ward off irreparable damage. His numerous plates of his experimental findings confirm the autodigestion of the mucosa, and injury of the liver, pancreas, etc.

Pediatria, Naples

Feb. 15, 1922, **30**, No. 4

*Agglutinins in Diagnosis of Typhoid. S. Maggiore.—p. 145.
Blood Pressure in Whooping Cough. F. de Angelis.—p. 152.
*Food Requirements of Breast-Fed Infant. C. Pestalozza.—p. 158.
The Pirquet Diet System. U. De Gironcoli.—p. 170.

Agglutination Test.—Maggiore's tables show that while the serum of typhoid patients will agglutinate their own typhoid bacilli, it may not have any agglutinating action on typhoid bacilli from other subjects, while the serum from others may agglutinate all the strains. Agglutination tests therefore may give negative findings unless the individual typhoid bacilli are used.

Food Requirements of the Infant.—Pestalozza here reports another series of research on a healthy infant, recording its weight before and after feeding every day for twenty-four weeks, during which time the breast milk was given daily chemical analysis, and the proportions of fat, lactose and albuminoids recorded and compared with the infant's weight week by week. The tables and charts reproduced give thus a standard for comparison. The child had doubled its weight in 120 days, and never displayed any tendency to vomiting or diarrhea. One table gives the normal standards as determined by other pediatricians. He gives also the energy quotient, the growth quotient, and the number of calories from week to week.

Policlinico, Rome

Feb. 6, 1922, **29**, No. 6

*Wassermann Reaction. S. de Villa and A. Ronch.—p. 185. Conc'n No. 7, p. 217.
*Leukemic Hematoma. V. Aloi.—p. 192.
The Hydatid Cyst Thrill. B. Masci.—p. 194.
*Advantages of Combined Treatment for Cancer. G. Rocchi.—p. 195.

Experimental Study of Wassermann Reaction in Children.—De Villa and Ronch report extensive research at the children's clinic in Rome in charge of Luzzatti. Sixteen tables show the findings with various lipoids, human milk, serum, etc., used as amboceptor or antigen. It was apparently established that cholesterin or a mixture of lipoids can be used for the antigen in the Wassermann reaction. Human milk can also serve as a partial antigen, and human serum as a partial amboceptor. The serum from the colostrum of women, syphilitic or not, can substitute completely the syphilitic amboceptor, but can never serve as an antigen. The proportion of cholesterin in the blood has no influence on the Wassermann reaction. The final conclusion is that the antigens function by their lipoid content, and that the amboceptors of syphilitic serums are of albuminoid proteic nature.

Spontaneous Hematoma.—The man of 30 developed a rapidly growing tumor in the back below the scapula. It was due to extravasated blood which spread around the right half of the chest. Puncture showed the blood count characteristic of leukemia. The previously healthy man died in less than two months from the first symptom, which had been the pain from pressure as the hematoma developed.

Combined Treatment of Cancer.—Rocchi urges combination of operative measures with radium and roentgen-ray treatment, especially deep radium treatment.

Riforma Medica, Naples

Jan. 16, 1922, **38**, No. 3

*Sciatic Neuritis from Lead Poisoning. E. Tedeschi.—p. 49.
*Influence of Glucose on Bacteria. D. Franceschelli.—p. 52.
*Chronic Appendicitis in Adolescents. O. Cignozzi.—p. 55.
Source of Error in Three-Glass Test of Urine: The Cystitis-Phosphaturia Syndrome. G. Tomasinelli.—p. 58.
Forensic Import of Contusion of Bed of Kidney. E. Aievoli.—p. 60.

Sciatic Neuritis from Lead Poisoning.—The first of Tedeschi's four cases was in a type-setter of 40 with a history of lead colics. The right sciatic nerve finally developed a toxic neuritis, involving the tibialis, the features of the case testifying to a radicular origin. The painful paresthesia during micturition and other sensory disturbances seemed to point to the second sacral root. The man changed to another trade, and the symptoms gradually subsided until, in a few months, nothing was left of the neuritis but a vague ache and slight hypotrophy. The second patient, a house painter, presented the same clinical picture of neuritis of the right sciatic nerve, with the additional feature that rapid bending the head forward caused pain in the right lumbosacral portion of the spine. The two other cases were superposable on the others, all affecting the right leg, with more or less impairment of electric reactions, motor and sensory functioning, and trophism. The textbooks say that toxic neuritis is usually bilateral, and that the arms are the predominant site.

Influence of Sugar on Infections.—The virulence of streptococci seemed to be enhanced when phlorizin diabetes was induced in rabbits. Staphylococci did not seem to be affected, and no effect was apparent from sugar fed in large amounts or injected in the animals.

Stunting of Growth by Chronic Appendicitis.—The assumption that the chronic appendicitis was responsible for the dystrophia and infantilism of several adolescents, of whom illustrations are given, was confirmed by the rapid development to the normal standard after appendicectomy.

Rivista di Clinica Pediatrica, Florence

October, 1921, **19**, No. 10

*Aneurysm in Child's Aorta. M. Pincherle and Dalla Volta.—p. 577.
*Schick Reaction in Nurslings. M. Flamini.—p. 621.

Aortitis in a Child.—In connection with a case in a boy of 7, with two aneurysms in the arch of the aorta, Pincherle and Dalla Volta review the bibliography on aortitis, atheromasia and ectasia of the aorta in children. They have thus compiled over 100 cases. Among the more common causes recorded are syphilis, rheumatism, various acute or chronic infections, toxic action (principally alcohol) or endotoxins (especially from kidney disease). In the case personally observed, the child had chronic nephritis.

The Schick Reaction in Young Infants.—Flamini obtained a positive reaction in 17 per cent. of 250 infants 3 or 4 months old; in 29 per cent. of 135 from 4 to 8 months old; in 36 per cent. of 30 from 8 to 12 months; in 46 per cent. of 45 from 1 to 2 years old, and in 50 per cent. of 80 children between 2 and 3. The test applied to the 190 nursing women elicited a positive response in 32 per cent. Among the 60 thus giving a positive reaction, only 4 of the infants they were suckling displayed a positive reaction, while 38 of the infants were positive among the 130 suckled by negative women. That is, 56 nursing infants had a positive reaction, showing the presence of diphtheria antitoxin in their blood, while their mothers did not have it. Flamini argues that this shows that the infants have developed the antitoxin on their own account. Some substance formed in their blood seems to behave like an antitoxin for diphtheria; it may be some product of the glands or tissues. Its production may gradually cease as the infant grows older.

Archivos Latino-Amer. de Pediatría, Buenos Aires

November-December, 1921, **15**, No. 6

*Acute Phlebitis in Children. L. Morquio.—p. 538.
*Epidemic Encephalitis and Chorea. G. Aráoz Alfaro.—p. 546.
*Disturbance in Typhoid Immunization. J. Bonaba.—p. 557.
*Treatment of Pott's Disease. J. M. Jorge.—p. 573.
Masked Tuberculosis in Children. R. Cibils Aguirre.—p. 581.
Feeding Infants with Congenital Debility. Américo Mola.—p. 612.
Peritonitis From Inherited Syphilis. Acuña and Casaubon.—p. 631.
Progressive Lipodystrophia. A. Carrau.—p. 645.
Active Immunization Against Diphtheria. P. de Elizalde.—p. 650.
Ossification in Children. V. Escardó y Anaya.—p. 662. Conc'n.
Medical Treatment of Hydrocephalus. J. C. Navarro, J. P. Garrahan and E. A. Bercetche.—p. 668.

Acute Phlebitis in Children.—Morquio's analysis of the literature confirms the exceptional character of acute phlebitis in the limbs in children. He has never encountered it himself but twice. In both cases the phlebitis of the left femoral vein had followed typhoid, in girls of 9 and 10. The interval had been six weeks in one case, and the typhoid nature of the sickness had not been recognized. The symptoms had been those of scarlet fever. But the phlebitis was unmistakably a manifestation of typhoid septicemia. The phlebitis ran a two or four months' course to final recovery in the two cases.

Chorea.—Aráoz Alfaro argues that the facts observed in epidemic encephalitis have demonstrated that ordinary chorea in the majority of cases is a mild encephalitis, localized mainly in the striate body, and due to various infectious agents acting on an unstable nervous system, constitutionally or temporarily substandard. The infectious agent most commonly involved is the one that is responsible for acute articular rheumatism. Other infectious and toxic agents are also liable to induce it in the predisposed, and intense emotional stress may be the occasional cause.

Recurrence of Typhoid.—Bonaba reports two cases in which children of 10 and 13 had recovered from a long attack of typhoid, and developed typhoid anew after a few days of good health, the second attack a typical typhoid. In four other children the typhoid relapsed forty-five or fifty days after apparently complete recovery. The relapse manifested itself only as a slight but prolonged fever, the spleen enlarging, with positive seroreaction and blood cultures. One of these children had a skin disease, others a tuberculous focus, or acute rheumatismal joint process, and he is inclined to think that these secondary infections modified the natural typhoid immunization process. In another child of 12 a tuberculous process in the sternum and clavicle and adjacent glands seemed to annul the effect of vaccination against typhoid, so that the girl developed severe typhoid although supposedly protected by the recent complete vaccination. This is the only instance of failure of vaccination to protect in his experience, and it seems rational to ascribe it to the preexisting tuberculosis. There was no agglutination after the vaccination in this case. The typhoid fever speeded up the previously latent tuberculosis, with promptly fatal meningeal involvement.

Pott's Disease.—Jorge urges a campaign in favor of horizontal reclining on a hard bed as the routine treatment of progressive tuberculosis of vertebrae. By this means suppurative and nervous complications are warded off, and the spine does not develop a gibbus.

Semana Médica, Buenos Aires

Dec. 1, 1921, **28**, No. 48

*Cancer of Appendix. J. R. Rios.—p. 739.
*Retrograde Esophagoscopy. J. M. Jorge.—p. 753.
*Wounds of the Eyes in General Practice. R. Argañaraz.—p. 756.

Primary Cancer of the Appendix.—Rios' patient was a young woman and the appendix was removed under the diagnosis of chronic recurring appendicitis, but it proved to be the seat of primary malignant disease. He thinks that this is more common than generally recognized, and that this is a further argument for appendicectomy whenever the abdomen is opened up for any purpose. In all the cases published, the age in the majority was between 20 and 30; his patient was 21. Cases even younger than this are known; he cites 4 cases at 5, 6, 8 and 9 years of age, and 4 at 15 or 16; one at 52; one at 70 and Rogg's case at 80. Women formed 60 or 70 per cent. of the total. Several of the patients were tuberculous. In 83 per cent. the diagnosis had been appendicitis; in 7 per cent. the cancer in the appendix was a necropsy surprise, and in 10 per cent. a surprise in the course of a laparotomy for other causes.

Retrograde Esophagoscopy.—Jorge was unable to locate the plate of false teeth in the esophagus by direct inspection in these two cases, but he accomplished this and safely removed the foreign body through an opening in the stomach. The procedure was facilitated by passing a sound through the mouth into the stomach. This located the cardia at once, and acted as a guide for the esophagoscope.

Penetrating Wound of the Eye.—The practitioner consulted in a case of this kind may have to decide whether there is a foreign body in the eye, as the fate of the eye may depend on this first examination. The main thing is to prevent infection. Alcohol, ether or iodin should not be used around the eyes. Argañaraz advises instilling 2 or 3 drops of a 1 per cent. solution of cocain, and then copiously flushing the conjunctival sacs with saline. If the wound is in the cornea, he advises introducing a little of a 1:1,000 mercuric chlorid salve, applying a cotton bandage, and referring the patient to the nearest eye clinic. But if there is hernia of the iris, this should be reduced first. If it cannot be reduced, he advises to snip off the herniated portion, level with the cornea, with fine scissors. This simple intervention allows the corneal wound to heal naturally. He expatiates in conclusion on the great benefit from parenteral injection of milk in every grave suppurative process in the eye. His practice is a daily intragluteal injection of 5 c.c. of fresh milk, heated to 90 C. for three minutes only.

Siglo Médico, Madrid

Jan. 7, 1922, **69**, No. 3552

Germ Carriers and Contaminated Waters. C. M. Cortezo.—p. 1.
Treatment of Pulmonary Tuberculosis by Natural Agents. Ramón Villegas.—p. 3. Cont'd.
*Operative Treatment of Pulmonary Tuberculosis. Sauerbruch.—p. 5.
The Kidneys and Glycosurias. J. Caballero y Fernández.—p. 8. Cont'd.
Campaign for Public Health in Spain. L. Muñoz Antuñano.—p. 11. Cont'n.

Operative Treatment of Pulmonary Tuberculosis.—Sauerbruch extols the fine results that can be realized by extensive resection of ribs to mobilize the wall of the chest in cases

of chronic unilateral tuberculosis, with cavities, in which conditions prevent artificial pneumothorax. Improvement follows in a large proportion of the cases, and it amounts to a permanent cure in a third of them. A combination of resection of ribs, above or below, plus an artificial pneumothorax over the rest is often effectual. Jacobæus advocates severing the adhesions with the galvanic cautery under direct thoracoscopy, but Sauerbruch prefers to this the combination of rib resection and artificial pneumothorax, as answering the same purpose with less danger. The adhesions may contain vessels and bronchial twigs, and hemorrhage or infection might be entailed by severing them. Extrapleural tamponing may aid, the lung gradually shriveling and retracting away from the tampon. He does not approve of the use of a filling. He regards direct opening up of a cavity with rigid walls as justified, and advises not to reserve it for the last resource. He has operated on the lung in 481 cases, and 40 per cent. were benefited. They were all rebellious to years of climatic-dietetic treatment. The most brilliant successes, he adds, were in persons who continued or resumed their self-support.

Jan. 14, 1922, **69**, No. 3553

Treatment of Acute Malaria. Sadi de Buen.—p. 29.
Biologic and Curative Action of Secondary Rays Obtained by Silver Ionophoresis. F. Ghilarducci.—p. 34.

Jan. 21, 1922, **69**, No. 3554

Diaphragmatic Hernia; Two Cases. J. Codina Castellvi.—p. 57. Conc'n No. 3555.—p. 89.
*Protein Therapy for Infants. J. Diaz Rodriguez.—p. 60.

Protein Therapy in Gastro-Enteritis in Infants.—In the case described, the long chronic enteritis had resisted the whole arsenal of ordinary measures. The bottle-fed child, 20 months old, had had digestive disturbances from the second month of age. It had been given breast milk for three months, and goat's milk after this. Diaz gave an injection of 0.5 c.c. of goat's milk in the abdominal wall; 1 c.c. was injected three days later, then 2 c.c., and then 4 c.c.—all at three-day intervals. There was no febrile reaction, but the whole condition rapidly improved until the child seemed normal and lively. The retrospective diagnosis was anaphylaxis to the special milk that had been used, and the anti-anaphylactic injection cured this.

Deutsches Archiv für klinische Medizin, Leipzig

Jan. 24, 1922, **138**, No. 3-4

*Infantilism. Borchardt.—p. 129.
*Roentgen Examination of Heart Functioning. F. M. Groedel.—p. 144.
*Nonprotein Nitrogen in Blood and Tissues. I. Barát and G. Hetényi.—p. 154.
*Reflux of Pancreatic Juice into Stomach. G. Deusch and H. Rürup.—p. 165.
*The Blood in Exophthalmic Goiter. G. Deusch.—p. 175.
*The Humidity and Insensible Perspiration. O. Moog.—p. 181.
*Production of Urea by Diseased Liver. G. Hetényi.—p. 193.
*Origin of Cheyne-Stokes Respiration. F. Herzog.—p. 200.
Blood Reaction with Kidney Disease. H. Straub and K. Meier.—p. 208.
*Ether-Treated Tubercle Bacilli. W. Fornet.—p. 229.
Acute Interstitial Myocarditis. A. Hafner.—p. 236.
Diagnostic Import of Catalase Content of Blood. E. Segali and M. Händel.—p. 243.

Infantilism.—Borchardt explains the various causes for the arrest of development which entails that certain physical and mental properties of the growing individual correspond to an age younger than the age actually attained. The cause may be inherited, or it may be some injury of the germinative tissue, or some upset in the endocrine system, or some external influence, infectious, toxic or alimentary. Some of these injurious influences seem to exert their action by inducing a lack of lecithin, "that important and indispensable stimulus for growth." Reduction of the amount of total nourishment does not entail infantilism in animals, but depriving them of certain "body bricks"—the tryptophan and lysin of the protein molecule—arrests the growth. Only when the lacking lysin is restored to the food does growth proceed. Syphilis, tuberculosis, tetanus and diphtheria toxins all seem to have the property of binding lecithin, and the lecithin is thus withdrawn from its physiologic purposes. Leprosy, malaria, pellagra and echinococcosis probably have this same lecithin-depriving action, as also certain nutritional disturbances and intoxications. Alcohol is preeminently a toxin for lipoids. He saw a boy of 5 who had actual delirium tremens, his father letting the boy drink with him. The child did not look older than the age of 3.

Roentgen Examination of Heart Functioning.—Groedel concludes this analysis of what we can learn from roentgen examination of the heart with the statement that the darker shadow in the hilus region of the lung—indicating stagnation in the circulation—is the only early sign of failing compensation in the heart action.

Nonprotein Nitrogen in Blood and Tissues.—The residual nitrogen content of the tissues physiologically is higher than that of the blood.

Reflux of Pancreatic Juice Into the Stomach.—Tests of forty persons demonstrated that trypsin finds its way into the stomach probably regularly, but it is digested by the gastric juice unless gastric secretion is much below par. Hence no conclusions as to pancreas secretion can be drawn from the stomach content unless it is known that the secretion of hydrochloric acid is below 0.5 per thousand.

The Blood in Exophthalmic Goiter.—Deusch tabulates the blood viscosimeter and the serum refractometer findings in eleven persons with exophthalmic goiter. The refractometer findings show the state of the protein metabolism at the moment. They thus give a general insight into the progress upward or downward in a given case.

Influence of Humidity on Insensible Perspiration.—Moog was surprised to find in tests of five persons that the insensible perspiration continued the same regardless of the greater or less humidity of the air. This could not occur if the insensible perspiration were merely an ordinary evaporation process. If this were the case, the amount of water cast off through the skin would diminish with increasing humidity, while the reverse of this was the rule in his tests.

Urea-Forming Property of the Liver.—Hetényi reports that with pathologic conditions in the liver, the synthesis of urea from ingested ammonium salts takes twice or three times as long as usual.

Origin of Cheyne-Stokes Respiration.—Herzog declares that the varying carbon dioxid content is a consequence, not the cause of cyclic breathing. He ascribes this to a periodical disturbance in the regulation of the respiration by the vagus—a periodical variation in the *selbststeuerung*. He found characteristic changes in the relative duration of the inspiration and expiration phases in nine cases of Cheyne-Stokes respiration he has been studying.

Improved Tuberculin for Diagnostic Purposes.—Fornet relates that ether fumes bubbling through a culture of tubercle bacilli at 40 C. gradually dissolve away the waxy cover of the bacilli. The surface of the fluid becomes coated with a creamlike substance. The bacilli thus freed from their waxy shell grow more luxuriantly and rapidly; they cast off their products profusely, and they become susceptible to influences against which they were previously protected. They thus are much more effectual when used for diagnostic purposes than ordinary tuberculin. Besredka accomplishes much the same purpose by cultivating the bacilli on an egg yolk and lecithin medium; this also tends to dissolve the waxy coat of the bacilli. (W. Fornet, now of Saarbrücken, was chief of the state prophylaxis of typhoid in Germany at one time.)

Deutsche medizinische Wochenschrift, Berlin

Jan. 19, 1922, **48**, No. 3

Treatment of Malignant Growths. Sauerbruch.—p. 83. Cont'd.
The Effect of Laryngectomy on the Speech. P. Sudeck.—p. 85.
Significance of Iso-Agglutination for Direct Blood Transfusion; Also the Effect of Drugs, Anesthesia and Roentgen Irradiation on Iso-Agglutinins. R. Eden.—p. 85.
Modern Prophylaxis Against Diphtheria. H. Opitz.—p. 87.
Chemical Composition of Floccules Formed in Serologic Reactions in Syphilis. E. Epstein and F. Paul.—p. 89.
*Reinfusion of Own Blood in Tubal Abortion. B. Töpler.—p. 92.
Generalized Emphysema. J. Duken.—p. 93.
Cholesterin Content of Kupffer's Stellate Cells. Stöcker.—p. 93.
Case of Myelitis Gripposa Acuta. S. S. Semenow.—p. 94.
Treatment of Chronic Gastric Ulcer. R. Kovjanic.—p. 94.
Unreliable Clinical Thermometers. K. Scheel.—p. 95.
Treatment of Burns. Tunger.—p. 95.
Modified Type of Saccharometer. Lassar-Cohn.—p. 95.
Present Status of Clinical Psychiatry. E. Kretschmer.—p. 95.
Inflammations of Female Genital Organs. W. Liepmann.—p. 96.

Reinfusion of Own Blood with Tubal Abortions.—Töpler reports twenty-four cases and expatiates on the smooth recovery after the reinfusion although the anemia was extreme, the pulse scarcely perceptible, and the dyspnea and collapse profound. In two of the cases the ovum was in the abdominal cavity; the others were tubal abortions. The blood was scooped up out of the abdomen, clots and all, and strained through eight layers of mull into an Erlenmeyer jar, where it was diluted with saline and kept at body temperature in the water bath until it could flow through a cannula into the median vein. He is convinced that some of these women could not thus have been tided past the danger point with saline alone.

Jahrbuch für Kinderheilkunde, Berlin

January, 1922, **97**, No. 1-2

Pathology of Infectious Toxicosis in Infants. F. Göppert.—p. 1.
*Infiltration in Myocardium in Lymphatism. H. Rieder.—p. 9.
*Food and Gastric Secretion. P. Hoffmann and S. Rosenbaum.—p. 46.
*Leukolysins. E. Stransky and E. Schiller.—p. 55.
Bilateral Athetosis in Children. E. Thomas.—p. 61.
*Concentrated Flour Gruel for Infants. E. Rachmilewitsch.—p. 78.
*Alkalinity of Blood in Infants. E. Krasemann.—p. 83.
*Butter-Flour Gruel and Butter-Flour Milk. H. Flesch and F. v. Torday.—p. 103.

Infiltration in Myocardium in Children Dying Suddenly.—In 7 of 9 cases of sudden death in young children, Rieder found the same infiltration of the myocardium with lymphocytes and round cells that Riesenfeld has recently reported in 5 cases of primary idiopathic hypertrophy of the heart in infants. These children were 9 to 18 months old and had been apparently healthy all their lives until dyspnea, cyanosis, vomiting and convulsions suddenly developed and soon proved fatal. No other pathologic changes were found except the more or less pronounced lymphatism. In 3 of Rieder's 9 cases, a fall was the direct cause of death, but the lymphatism, the excentric hypertrophy of the heart, and the microscopic findings were the same as in the others. In the others, death occurred so rapidly that no diagnosis had been made. In 4 of the children the thyroid was enlarged; several had eczema, and all had a history of some infectious disease. The round-cell infiltration seemed to be of inflammatory origin, not a mere manifestation of the general lymphatism. This is ample to explain the excentric hypertrophy of the heart and the sudden collapse of the heart in some of the cases. In 9 control cases of death from ordinary causes in children with lymphatism, the heart was hypertrophied but there was no round-cell infiltration. The sudden death in Rieder's and Riesenfeld's cases recall Feer's compilation of 21 cases of "eczema death." Karrer has published 2 cases of this kind with round-cell infiltration in the myocardium, and in one of them he found staphylococci in various organs. This throws light on cases of sudden "eczema death." The eczema and the myocarditis are evidently connected, and the lymphatic status is responsible for the gravity of the disturbances from the other causes.

Gastric Secretion in Relation to the Food.—In this fourth article on the pathogenesis of acute alimentary nutritive disturbances in infants, Hoffmann and Rosenbaum report that in all their tests albumin stimulated the secretion of gastric juice when it was in a higher concentration than in human milk. Otherwise not; and fats and carbohydrates were likewise inert in this respect. Peptonized albumin was more active than plain albumin, while trypsin-predigested albumin was less active.

Digestion Leukopenia in Infants.—Stransky and Schiller present arguments against the assumption of a production of leukolysins as the cause of digestion leukopenia. Whatever the cause may be, it is not this.

Artificial Feeding for Infants.—Rachmilewitsch describes experiences with what he calls a concentrated fluid flour decoction. Flesch and Torday describe their results with the butter-flour gruel and the butter-flour-full milk mixture.

Alkalinity of the Blood in Infants.—Krasemann endorses the reliability of Rohonyi's simple test for acidosis in the blood. By shaking up the blood in the air, the carbon dioxid content comes to equal that in the air, and by removing the albumin with alcohol, the proportion of sodium bicarbonate in the blood can then be estimated with alizarin red. Examining the blood with a given carbon dioxid tension, the amount of sodium bicarbonate is an index of the amount and concentration of the acids in the blood. Acidosis seems to be the rule in very young infants, the more pronounced the younger the infant, as also in the clinical pictures of toxicoses.

Mitteil. a. d. Grenzgeb. d. Med. u. Chir. Jena

1922, **34**, No. 4

*Consequences of Hyperthymization. R. Demel.—p. 437.
*Meiostagmin Test for Cancer. W. Schemensky.—p. 451.
The Appendicitis Question. Rheindorf.—p. 463.
*Dilatation of Esophagus. H. Meyer.—p. 484.
*Sugar Content of Blood in Surgical Affections. E. Seitz.—p. 514.
Diverticulum in Duodenum. H. Holzweissig.—p. 527.
*Foreign Cells in Human Goiter. L. Merk.—p. 554.

Experimental Research on the Thymus.—No influence on the skeleton or organs of rats could be detected from feeding thymus tissue. But implantation of the thymus from normal rats into others of the same litter was followed by more rapid growth of the bones in length and in maturity. The grafted rats seemed to be livelier and stouter. The influence of the thymus on the growth of the skeleton was apparent also when the thymus was removed from other rats. No functional influence on the sexual glands, suprarenals or pituitary from the hyperthymization could be detected.

The Meiostagmin Reaction in Cancer.—Schemensky examined the urine from twenty-four certain cases of cancer and nineteen dubious cases. The findings confirm that the stalagmometer quotient of the urine is a reliable index of the presence or absence of malignant disease, in the overwhelming majority of cases. The high stalagmometer findings are due probably to the elimination of protein waste in the cancer cases. His tabulations show the details and suggest that the course of the case will probably clear up the few contradictory findings.

Dilation of the Esophagus and Spasm of the Cardia.—Meyer found an ulcer in an hour-glass stomach with spasm of the cardia, and nothing but the ulcer to explain the spasm. In another case an ulcer in the esophagus was responsible for the spasm at the cardia. Benign spasm of the cardia may simulate cancer, and necropsy first reveal the blunder. In this second case, pulmonary tuberculosis may have been responsible for the cardiospasm. Lead poisoning might likewise explain it as an autonomic neurosis. Lead has a remarkable affinity for the vagus nerve. Cardiospasm is rare in children, but Meyer reports a case in a child of 7. The opening in the diaphragm was unusually large, and this was sutured. The cardia became more permeable thereafter, but the esophagus is still abnormally large. A number of other cases of various origins are described. Resection of the cardia was done in five cases, once from above and four times from below the diaphragm. With intermittent spasm and other disturbance from vagotonia, hypnosis, atropin and lavage of the stomach might be tried. With permanent spasm, mechanical distention is required, or a cardioplastic operation. The spasm returned recently in two such cases after operative treatment. In the terminal stage, dysphagia atonica, the esophagus sags below the cardia, so the obstruction here may be mechanical rather than spastic.

The Blood Sugar in Surgical Affections.—Seitz here discusses tuberculosis, cancer, salpingitis, gastric ulcer and gallbladder and thyroid disease in relation to the outcome of alimentary hyperglycemia tests. In staphylococcus, streptococcus and tubercle bacilli infections the predisposition to hyperglycemia seems much enhanced. In fifty-two cases of hyperthyroidism, test ingestion of sugar or injection of suprarenal extract confirmed the irritability of the sympathetic nervous system in the graver conditions. The return to a normal response after thyroidectomy is another argument in favor of the utility of operative reduction of the thyroid.

Foreign Cell Formations in Human Goitera.—Merk calls attention to some microscopic bodies he has found in certain thyroids. They seem to be spores or rusty scales or ovum-like bodies. They show a bright yellow tint in certain lights, and he is inclined to regard them as of protozoon origin.

Medizinische Klinik, Berlin

Jan. 15, 1922, **18**, No. 3

*Gonorrhea a Chronic Disease. A. Buschke and E. Langer.—p. 65.
Traumatic Neurosea. P. Horn.—p. 70.
Arsphenamin plus Mercuric Chlorid in Syphilis. E. Schmidt.—p. 74.
*Recurrent Paralysis with Mitral Defect. Frida Klein.—p. 76.
*Amyostatic Encephalitis. H. Vollmer.—p. 78.
*Skin Manifestations of Uratic Diathesis. E. Pulay.—p. 79.
Physical Measures in Heart Disease. E. Tobias.—p. 80.

Chronic Gonorrhea.—The importance of gonorrhea as a general disease, the foci usually inaccessible to direct medication, impresses the necessity for perfecting specific vaccine therapy as apparently the only way to root out the disease in many cases.

Recurrent Paralysis.—The left recurrent paralysis in the young man had developed with a mitral defect of rheumatismal origin.

Amyostatic Encephalitis.—The case in the 2 year old child is distinguished by certain unusual motor and reflex disturbances.

The Skin Manifestations of Gout.—This is Pulay's fifteenth instalment of his series on diseases of metabolism in connection with skin disease. His heading is "The Vagotonic Manifestations in the Skin as the Expression of the Uratic Diathesis." Besides urticaria, angioneurotic edema and pruritus, he includes chronic recurring eczema in this group. The high uric acid content of the blood is a feature of this form of eczema, although the content in the urine is normal or below. In one child with the skin lesions characteristic of the exudative diathesis, the hyperuricacidemia was pronounced. The share of vagotonia and a gouty tendency in the clinical picture was confirmed by the benefit from measures to combat the uratic diathesis, but above all by the cure under treatment of the pruritus—which is the inaugural symptom in all this group—and atropin is effectual for this. Abnormal metabolic processes, retention of uric acid, are the primal cause, acting on an unstable vasomotor system. It must be borne in mind further that the endocrine glands are under the control of the vegetative nervous system. The uric acid metabolism in cases with excessive or deficient endocrine functioning should be studied, and likewise the behavior of the uric acid metabolism after removal of different endocrine glands.

Münchener medizinische Wochenschrift, Munich

Jan. 13, 1922, **69**, No. 2

Orthopedic Correction of Diminished Muscular Tonicity and Deep Anesthesia in Tabes Patients. H. von Baeyer.—p. 37.
Character and Origin of Pus Cells in Gonorrheal Conjunctivitis and Urethritis. L. Kraus.—p. 38.
Treatment of Tumors with Arsphenamin. P. Matzdorff.—p. 42.
Experiences with Neo-Silver-Arsphenamin. F. Zimmern.—p. 43.
Endolumbar Injections of Arsphenamin in Syphilis. T. Benedek.—p. 44.
Butter-Flour Mixture in Infant Feeding. H. Schlossmann.—p. 46.
*Incidence of Goiter in Schoolchildren. J. Kraeuter.—p. 47.
External and Internal Migration of Ovum. Hanns Baur.—p. 48.
Domestic Substitutes for Senega and Ipecacuanha. Grimme.—p. 50.
Availability for the General Practitioner of the Flocculation Reaction in the Diagnosis of Syphilis. R. Weiss.—p. 51.
Painless Labor. E. Zweifel.—p. 52.
Arteriotomy. T. Gluck.—p. 53.
Pathologic Anatomy and Nomenclature of Pulmonary Tuberculosis. F. Marchand.—p. 55. Begun in No. 1, p. 1.
Need of Rubber Gloves in Bandaging Wounds. A. Krecke.—p. 58.

Incidence of Goiter in Schoolchildren.—Kraeuter examined in Munich 1,840 schoolgirls ranging in age from 3 to 19; 56 per cent., or 973, presented goiters of various sizes—mostly diffuse and parenchymatous. The age group 14-15 was most affected (doubtless associated with puberty), there being 339 goiters (20 good sized) in this group, a percentage of 62.5 per cent. Hyperthyroidism was manifest in 1.5 per cent. of the children examined. Operation had been performed on 1.2 per cent., and there were recurrences in 0.7 per cent. Only 1.6 per cent. of those affected were receiving treatment. Compression symptoms were manifest in 0.3 per cent. Kraeuter refers to Marine's successful trials with iodin treatment of 1,000 schoolgirls in Cleveland, Ohio, in 1917, and to the good results secured with iodin treatment by Klinger in 1919 in endemic sections of Switzerland. She would like to see a systematic treatment of schoolgirls in Munich instituted and recommends Klinger's small dosage. Klinger reported, in the case of 1,000 pupils from 6 to 14 years old who received treatment for fifteen months, that most of the goiters disappeared and the few that remained became much smaller. (Marine's experiences were summarized in THE JOURNAL, Dec. 1, 1917, p. 1911; Klinger's, Feb. 26, 1921, p. 621.)

Therapeutische Halbmonatshefte, Berlin

Oct. 15, 1921, **35**, No. 20

Circulatory Weakness in Acute Infectious Diseases. Bingold.—p. 617.
Experimental Bases for Systematic Muscular Exercise in Treatment of Diabetes. M. Bürger.—p. 622. Conc'n No. 21, p. 657.
Mixtures of Analgesics. E. Starkenstein.—p. 629.

Wiener Archiv für innere Medizin, Vienna

Nov. 15, 1921, **3**, No. 1-2

*Nephritis from Chilling. F. Gaisböck.—p. 1.
*Technic for Percussion. A. Lehndorff.—p. 45.
Diagnosis of Internal Disease by Galvanopalpation of the Skin. M. Kahane.—p. 67.
Value of Coin Test in Clinical Diagnosis. V. Kollert.—p. 111.
*Pathogenesis of Essential Hypertonia. H. Kahler.—p. 125.
*Research on Jaundice. R. Strisower.—p. 153.
*Polyglandular Insufficiency. A. Edelmann and P. Saxl.—p. 227.
Paracardiac Areas of Dulness. G. Felsenreich.—p. 235.
Determination and Interpretation of Diastolic Pressure. S. Peller.—p. 249.
Cardiac Asthma in Relation to Pulmonary Edema. L. Hess.—p. 263.
Elimination of Iron in Urine. F. Kisch.—p. 283.
Sweat Secretion in Man. S. Peller and R. Strisower.—p. 297.
Differential Diagnosis of Uremic Conditions. H. Beth.—p. 309.
*Low Blood Pressure and the Kidneys. A. Müller-Deham.—p. 323.
Quinin in Treatment of Heart and Vessels. R. Singer and H. Winterberg.—p. 329.
Acropachia. K. Paschkis.—p. 365.

Nephritis from Chilling.—Gaisböck in experimenting on rabbits found that acute inflammation of the kidney could be induced by direct chilling of the organ. Chilling to 9 or 10 C. induced nephritis of the glomerular-tubular type, while with chilling to 3 or 4 C. there were degenerative changes as well as inflammatory. The changes, however, seemed to be able to heal in time. Severing the splanchnic nerve or decapsulation beforehand did not seem to modify conditions, except that the latter was followed by proliferation of connective tissue, a traumatic nephritis. Inoculation with streptococci at the time of the chilling entailed an acute interstitial nephritis with severe changes in the glomeruli and entire parenchyma.

Improved Percussion.—Lehndorff arrests the spread sideways of the vibration from the percussion stroke, as a means of magnifying the actual findings. Any one can convince himself of the advantages of this by percussing in the center of a large metal ring, fastened to a long handle, and placed lightly on the wall of the chest; then repeating the percussion with the ring pressed down hard into the skin. This arrests the lateral vibrations, without modifying those inside the ring, and they are heard stronger and clearer than before.

Pathogenesis of High Blood Pressure.—Kahler tabulates the findings in 135 cases of essential hypertonia, and explains the various factors involved. In one group of cases, lumbar puncture reduced the blood pressure permanently. This can be due only to the fact that in this group the high blood pressure was the result of some primary toxic or circulating irritation of the vasomotor center, and that this irritation was relieved by the lumbar puncture.

The Duodenal Juice in Jaundice.—Strisower's summary of ninety-four cases of jaundice, with chemical analysis of the duodenal juice, demonstrates among other points that the proportion of bile pigment in the duodenal juice and qualitative tests for albumin in the same, are important from both the diagnostic and prognostic standpoints.

Cachexia with Glandular Insufficiency.—Three cases are described in which there was polyglandular insufficiency of the glands with an internal and with an external secretion. The patients were two women and one man, all in the fifties, and the course of the disease to the fatal outcome ranged from twelve weeks to eight years. Atrophy of the tongue, anacidity of the gastric juice, moderate diarrhea, fat stools and osteoporosis in 2 cases, sclerodermia in 2 were the most striking manifestations. The thyroid was very small, the

pancreas atrophied in 2, and, in all, the internal organs were small and atrophied.

The Kidney Functioning with Low Blood Pressure.—Deham's figures show great disturbance in elimination of water, as well as in the concentrating power of the kidneys, in seven cases of pathologically low blood pressure with nephritis, Addison's disease, gastric cancer or duodenal ulcer.

Wiener klinische Wochenschrift, Vienna

Jan. 5, 1922, **35**, No. 1

*Treatment of Tetania Parathyreopriva. A. Eiselsberg.—p. 1.
Rejuvenation After Prostatectomy Not a "Steinach Manifestation." V. Blum.—p. 2.
*Conduction of Sound in the Nose. L. Réthi.—p. 4.
*Sugar Content of Spinal Fluid in Disease. H. Kahler.—p. 8.
Treatment of Varicose Veins with Mercuric Chlorid. Fischer.—p. 11.
Fluctuations of Complement in Guinea-Pigs. W. Loew.—p. 12.
Atypical Case of Typhoid. H. Zweig.—p. 13.
Injections of Iodin in Parenchymatous Keratitis and in Hereditary Syphilis. A. M. Rosenstein.—p. 14.

Treatment of Parathyreoprival Tetany.—Eiselsberg states that of 2,588 strumectomies performed during the last twenty years, he observed 6 fatal cases due to tetany. In 4 cases more or less extensive pneumonia was found at necropsy. Three of the operations were necessary owing to relapses. General anesthesia was employed in only one case. In one case spontaneous tetany had occurred before the operation; immediately after the operation the symptoms became exceedingly severe, and death resulted in four hours. In 2 of these 4 cases, transplantation of parathyroids had been done. Besides the 6 fatal cases of tetany, there were 6 other severe cases. In a woman of 32 the tetany became chronic; a cataract developed; transplantation of thyroid and later of parathyroids was done, which brought about improvement. Later, during the cold season, paroxysms of tetany were frequent, whereby thyroid treatment helped. In one patient the eating of bread precipitated the attack of tetany. In one woman, bilateral cataract developed eleven years after the operation. A similar case of formation of bilateral cataract occurred in a Vienna hospital after operation. In addition there were a number of cases of mild tetany. Symptoms resulting from removal of thyroid are not helped by drugs; only organotherapy is efficacious. On the other hand, symptoms arising after removal of the parathyroids may often be relieved by the use of drugs. Sometimes epilepsy develops from tetany, in which transition the loss of the parathyroids plays a part. (A similar article by Eiselsberg was summarized recently on page 767.)

Conduction of Sound in the Nose.—Réthi reports research on conduction of sound in the nose, and on the effect of the breadth of the nose on the voice in singing.

Changes in the Sugar Content of the Cerebrospinal Fluid in Internal Diseases and Nervous Affections.—Kahler discusses the possible causes of the increase of sugar in the cerebrospinal fluid in most inflammations or overstimulated conditions of the brain. It may be due either to an abnormal permeability of the choroid plexus for sugar or an abnormally copious secretion of glucose by the plexus cells. Both conceptions are possible in view of Blumenthal's finding that the cerebrospinal fluid is formed by transudation and by secretion. The fact that Yoshimura demonstrated the presence of glycogen in the plexus cells, which he regarded as the forerunner of the sugar in the spinal fluid, lends weight to the secretion hypothesis. On the other hand, we cannot be sure but that abnormal metabolic processes in the brain substance itself may lead to an increase in the sugar content of the spinal fluid.

Zeitschrift für Kinderheilkunde, Berlin

Jan. 31, 1922, **31**, No. 5-6

*Tryptophan Requirement and Supply in Children. T. Ide.—p. 257.
*Influence of Saline Infusion on Infants. K. Scheer.—p. 290.
Infection with Syphilis Intra Partum. H. Rietschel.—p. 293.
*Syntropia of Morbid Conditions. Luise v. Seht.—p. 298.
*"Toxicosis" and "Intoxication." L. Langstein and H. Langer.—p. 314.
*Acute Nutritional Derangement. H. Langer and E. Mengert.—p. 319.
*Intestinal Bacteria. A. Adam.—p. 331.
*Artificial Feeding of Infants in Institutions. H. Davidsohn.—p. 367.
*Initial Diarrhea in the New-Born. L. Hauschild.—p. 399.
*Inflammation of Dental Germ in Infant. G. Dietrich.—p. 407.

Tryptophan Requirement in Children's Diet.—Ide reports research on the tryptophan content of colostrum, milk and other foods given young children, and calculates the optimal proportion. The work issues from the children's clinic in charge of Pirquet, and the calculations are by Pirquet's diet system.

Subcutaneous Injection of Saline in Infants.—Scheer replies to Stoltenberg's article criticizing his research on the effect of injection of sodium chlorid on the chlorid and nitrogen content of infants' serum.

Association of Morbid Conditions in Children.—Seht here describes the results of further study of what she calls the syntropia of diseases in children, the mutual attraction and relations between different morbid conditions, simultaneously or in sequence. The findings in 1,151 children at the Munich children's clinic showed a pronounced syntropia between cystitis and the hemorrhagic diathesis, as also between endocrine derangement and inherited syphilis, and nephritis and skin disease, especially impetigo. Other syntropias are rachitis with tuberculosis and pneumonia; spasmophilia and pneumonia; goiter with tuberculous syphilis, and nephritis and enuresis with syphilis.

Toxicosis a Vague Term.—Langstein and Langer urge the dropping of the terms toxicosis and intoxication to express a certain pathologic condition in infants. They explain that the only actually characteristic feature of the toxic reaction is the impairment of consciousness, and this is the guide to treatment. They advocate calling it dyspepsia with menacing or manifest coma.

Anticolon Bacillus Serotherapy.—Langer and Mengert's figures speak in favor of a colon bacillus antiserum. They used sheep serum for the purpose, the animals treated with a large number of strains of colon bacilli from severer cases of dyspepsia.

Intestinal Bacteria.—The fifth instalment of the results of Adam's research is devoted to the physiologic import of *Bacillus bifidus* with different diets. The tabulated findings fill sixteen pages.

Artificial Feeding of Young Infants in Institutions.—Davidsohn declares that a distinction must be made between the benign and the malignant form of diarrhea in very young infants. The benign form yields when more nourishment is given, while the malignant form requires abstention from food. This is directly injurious in the benign, the initial diarrhea. Differentiation is based on the general condition; it is only slightly impaired in the benign form, and there is no dark circle around the eyes. Sometimes only the lack of benefit from temporarily increasing the amount of calories in the food will reveal that it is the malignant type. Since the amount of calories has been systematically increased as the one thing needed for this benign initial diarrhea, the mortality in the institution has dropped from 20 to 3 per cent. Hauschild relates that bacteriologic examination in these cases of initial diarrhea always gave negative findings.

Dental Germ Process in Infant.—Dietrich adds another to the fourteen cases he has found on record in which an inflammatory process starting in a dental germ had induced sequester formation. In his case the process was in the lower jaw, and the young infant had erysipelas.

Zeitschrift für Urologie, Leipzig

December, 1921, **15**, No. 12

Transvesical Removal of Diverticulum in Posterior Wall of Bladder. Engelberg.—p. 496.
Pyelography. G. Praetorius.—p. 498. Reply. Barreau.—p. 507.
*Nephropexy for Abnormal Kidneys. S. P. Fedorow.—p. 508.

Nephropexy with Pathologic Kidneys.—Fedorow relates that he cured some patients by suspending the single horseshoe kidney, and thus relieving them of all their previous disturbances from this source. In 2 cases described in detail, the single kidney was movable in various directions. In 3 other cases the kidney had slid down into the right or left iliac fossa, and the disturbances were corrected by nephropexy, as also in 4 cases of movable cystic kidney. Some of the cysts were opened during the operation, which was a

further advantage. His experience thus encourages lumbar nephropexy with abnormal and pathologic kidneys, suspending the kidney with a flap from the capsule or the walls of the opened cysts. He always used stout iodized catgut for the suspension.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Dec. 24, 1921, **2**, No. 26

*Radicular Athetosis. C. T. van Valkenburg.—p. 3056.
*The Actual Sugar Content of Urine. G. C. Tervaert.—p. 3065.
*Gastric Achylia from Lack of Teeth. A. Willemse.—p. 3069.
Nulliparae Among Women with Uterine Cancer. H. T. Deelman.—p. 3073.
Exfoliating Eczema of the Lips. J. Lankhout.—p. 3075.
Recent Literature on Endocrine Glands. F. J. Stuurman.—p. 3077.

Dec. 31, 1921, **2**, No. 27

Opening a Tonsil Abscess with Finger. W. S. Stekhoven.—p. 3152.
Committee report on Revaccination Findings.—p. 3154.
Two Unusual Abdominal Wounds: Recovery. L. van der Wilk.—p. 3158.

Radicular Athetosis.—Van Valkenburg reports two cases in men of 26 and 42. The tremor is most pronounced in the arm but is evident throughout that whole side of the body. He analyzes these and similar cases, calling attention to what he styles the kinetic anesthesia.

The Sugar Content of the Urine.—Tervaert has been applying parallel tests with Benedict's, Nagasaki's and Sumner's technic, and was impressed with the precision, simplicity and reliability of Sumner's method. He quotes the directions for it from the *Journal of Biologic Chemistry* **47**:5, 1921.

Gastric Achylia.—Willemse has sifted out a group of cases with symptoms of gastric achylia, which he ascribes to lack of enough teeth for proper mastication.

Jan. 7, 1922, **1**, No. 1

Editing the Tijdschrift. G. van Rijnberk.—p. 5.
*Dietetic Treatment of Gastric Ulcer. J. Schrijver.—p. 10.
Primary Cancer of the Vagina. J. H. Engelkens.—p. 27.
How Man Learned to Walk. W. A. Mijsberg.—p. 34.
Nitritoid Crises in Three Serial Cases. C. Goedhart.—p. 42.
Gestation in Uterus Saccatus. J. A. van Dongen.—p. 43.
Atactic Form of Polyneuritis. M. W. Scheltema.—p. 45.
*Medical Folklore. F. M. G. de Feyfer.—p. 48.
*Medicine and the Physician in Old Prints. G. van Rijnberk.—p. 59.
*Steinach Vegetabilis. H. Pinkhof.—p. 71.

Dietetic Treatment of Gastric Ulcer.—Among the epoch-making names in the history of dietetic treatment of gastric ulcer from Cruveilhier to date, Schrijver mentions Lenhartz, Fütterer of Chicago (1902) Moynihan and the Mayos, and Mathieu's warning against ascribing to the ulcer or the diet what is really the result of swallowing of air. Schrijver comments on Boas' latest works on gastric cancer which show a modification of his former views. He emphasizes now that gastric ulcer is essentially a chronic disease. The long intervals of good health, up to twenty and thirty years, have always misled us as to the nature of gastric ulcer. Occult bleeding, Boas almost confesses now, does not have the significance he formerly ascribed to it. Schrijver himself keeps the patient absolutely quiet in bed, and has him sip slowly each hour a glass of pasteurized or boiled milk (250 gm.) each with 2 tablespoonfuls of lime water. If the stomach feels still full, he waits till the next hour. The mouth is rinsed and the tongue wiped several times during the day. The patient can thus take comfortably up to 3 or 3.5 liters of milk a day, and this can be kept up—which is seldom necessary—for two or three weeks or more. Buttermilk can be used if desired, adding two teaspoonfuls of sweet cream to each glass. With a bleeding ulcer, all food has to be withheld, and fluids supplied by the rectal drip. Then a glass of milk with half lime water is allowed every two hours; the next day, the same every hour; the third day, only one third lime water. The milk acts against both bleeding and pain in the stomach. Rarely does the occult bleeding keep up longer than a week. The prompt relief of pain usually is an aid in excluding gallstones and cancer. The flakes of casein are finer with lime water, and this helps to bind more of the acid. The milk does not stimulate the appetite, and hence there is no psychic gastric juice to contend with. The ice bag helps to control bleeding, and scraps of ice in the mouth quench thirst. If the ulcer returns after a year of cautious dieting, he advises calling in the surgeon.

Medical Folklore.—De Feyfer discusses in particular the practice of protecting the sick or the diseased part by strewing it with ashes, flour, clay, etc., or wrapping up with paper or wool, or wearing garments on which special healing properties had been conferred by contact with some holy relic.

The Physician in Old Illustrations.—In this fifth instalment of his long work on medicine in art, van Rijnberk gives eleven reproductions of prints from the seventeenth century, portraying military surgery and artificial limbs.

Steinach Vegetabilis.—Under this heading Pinkhof gives directions from Tobias Katz, 1706, for sexual rejuvenation by food and herbs when the testicles have become insufficient from any cause. He refers in particular to the plant satyrium, or cynosorchis, and the external application of salves, etc.

Acta Chirurgica Scandinavica, Stockholm

Dec. 20, 1921, **54**, No. 3

*Localization in Cerebellum. A. Troell and C. Hesser.—p. 211.
*Fistulas Between Jejunum and Colon. N. Hellström.—p. 282.
Bedcarriage Construction. S. Orell.—p. 312. In English.

Localization in the Cerebellum.—Troell and Hesser report that the effect of partial lesions of different parts of the cerebellum confirms the assumption that the lobulus ansiformis is the center for the extremities on the same side, but not exclusively so. Otherwise their findings all conflict with Bolk's views, as they explain. They give the details of thirty-one experiments and the resulting widely varying symptoms from the cerebellar deficit at different points. (In German).

Peptic Fistula Between Jejunum and Colon.—Hellström states that diarrhea was the first symptom in all the thirty-five cases he has compiled from the records. Then came eructation and fecal vomiting, followed by emaciation and aggravation of the general condition, and, lastly, pains. The periods of intermittence in the diarrhea were short and the diarrhea kept very persistent. In a case personally observed, in a man of 25, the symptoms of gastric ulcer returned five months after posterior retrocolic gastro-enterostomy. Then the stomach was severed close to the pylorus, but no new ulcer was found in the stomach as anticipated. The relief was transient, and the pains returned day and night, with vomiting several times a day, and up to twenty watery stools a day. The laparotomy disclosed the fistula between the jejunal gastro-enterostomy loop and the colon. The numerous diffuse and firm adhesions rendered resection very difficult, but the adherent portions of the stomach, jejunum and colon were removed. The patients were all men in the thirty-five cases he has compiled; unilateral exclusion of the pylorus had been done in nine cases. (In English.)

Ugeskrift for Læger, Copenhagen

Dec. 22, 1921, **83**, No. 51

*Water Test in Orthostatic Albuminuria. H. C. Gram.—p. 1791.
Bronchial Asthma and Chronic Constipation. Petersen.—p. 1798.

Dec. 29, 1921, **83**, No. 52

Barbital in Vomiting of Pregnancy. H. Jacobaeus.—p. 1823.
Special Diets in Hospitals. K. Faber.—p. 1829.

Jan. 5, 1922, **84**, No. 1

Bismuth and Arsenic in Treatment of Syphilis. Ehlers.—p. 4.
Emetin in Treatment of Amebic Dysentery. C. Ditlevsen.—p. 9.

The Water Freshet Test in Orthostatic Albuminuria.—Gram applied Strauss' water drinking test to eight young people with orthostatic albuminuria, the ages ranging from 11 to 24. The test was applied with the subjects constantly reclining, and was repeated on another day with the subjects up and about. A marked difference in the outcome was evident between the pure orthostatic cases and those of nephritis of the orthostatic type. This double test may thus prove useful in differentiating cases in which the orthostatic albuminuria is due to the relics of some nephritis. The details are tabulated for each case. With genuine orthostatic albuminuria, far more urine is voided reclining after the test than when up and about, while the reverse is the rule with nephritis.